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Teachers College RECORD

Volume XXVI, Number 3 November, 1924

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TEACHERS COLLEGE RECORD

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TEACHERS COLLEGE RECORD

VOL. XXVI NOVEMBER, 1924 NO. 3

TRENDS IN PROFESSIONAL EDUCATION *

By ROBERT JOSSELYN LEONARD

Director of the School of Education and Professor of Education, Teachers College

In a rapidly developing and forward-looking nation, crude methods tend to be refined, and standards of living, health, and education tend to be raised. The useful arts and sciences will be more fully developed and utilized. In this social evolution, the professions have played such a vital rôle that it is significant to note the trends in professional education.

The past few decades have witnessed striking advances in all the professions: the opening of new and larger opportunities of service for the trained specialist; the extension of the period of professional education, preceded by more extensive general education; the adoption of professional curricula based upon studies of professional requirements; improved standards of professional ethics among practitioners; a more complete state jurisdiction in the character and extent of professional education; the extension of the state's authority in licensing practitioners; and a heightened interest on the part of universities in professional education.

While most of the tendencies now operating in professional education are, without doubt, in the right direction, some are so sound as to warrant emphasis, others so difficult as to require isolation for study, and others so dangerous as to cause concern.

I

Professional schools of yesterday and to-day have little in common. In the main, professional schools of yesterday were isolated from all other educational institutions, under proprietary or commercial control,

* An address delivered at the Opening Convocation of Columbia University, September 24, 1924.

and, perforce, colored or dominated by monetary considerations. In the main, professional schools of to-day are either a part of, or associated with, our great universities, and removed thereby from commercial influence.

Next to the establishment of the free public school system, this is the most profound fact of American education. The free public school system assures to every youth the opportunity for productive American citizenship and all that it implies in the life of the Republic. The association of professional schools with universities assures the public of trained leadership at its best.

In this country the association of professional schools with universities is not old, nor is it based upon tradition.

Fortunately, education for the law long has been under university association or control. Engineering education did not become a university enterprise until after the period of the Civil War. Until well toward the close of the nineteenth century, medical education was proprietary in character. The early medical departments of universities made only nominal contributions until about 1890, when the great universities, one by one, began to accord a place of prime importance to medical education. The university medical schools now dominate. Pharmacy has enjoyed university interest and support for only thirty years; education for the short period of twenty-five years; and dentistry for a still shorter period, and not yet completely separated from proprietary control. Journalism, architecture, and business administration are even more recent additions to the university family.

So much has been said of the dangers of professional schools in our universities: of their possible encroachment upon academic tradition, of their possible disregard of culture and idealism, that it will do no harm to dwell upon our hopes.

What does it mean that now in the ten leading American universities, enrolling eighty-seven thousand students, fifty thousand are registered in professional schools, directly preparing for professional careers? It means, in a few years, fifty thousand men and women released for trained leadership, free from the bias of creed, free from the blight of pseudo-science, free from the curse of the mere technician; practitioners imbued to a certain extent, we trust, with university ideals of culture, of service, and of public devotion. From among them will arise lawyers and business men who are also economists, teachers who are educators, engineers who are nation-builders, physicians who are humanitarians, and clergymen who are social leaders.

What has the development of professional schools within universities meant to the professional schools themselves?

It has heightened the ideals of professional training and service. It has given impetus to research, without which professional schools soon degenerate into technical schools. It has led to the adoption of curricula of appropriate length, resting upon a sound general education, in which the deferred as well as the immediate values are recognized. It has made possible the attraction of scholarly men as instructors. It has attracted students of high intelligence with extensive preparation, who are willing to invest in themselves sufficient time and money for adequate training.

And so, the university has provided the environment necessary for professional schools to achieve the well-rounded development of which the leaders in each of the professions have dreamed.

To the universities, the professional schools have made worthy contributions. They have added to the vitality and strength which characterizes modern institutions. They have contributed to the assemblage of students thousands of mature men and women of driving purpose and varying interests. Complacency and provincialism have been prevented and broad tolerance and mutual respect developed among student groups. Vital contacts with the current problems of the day have been made possible and productive research has been fostered. The public belief in higher education has been strengthened greatly.

From an obscure position of suspicion, of mild tolerance, of previous decades, the professional schools of the great American universities now find themselves close to the center of interest, intimately interwoven in the structure of the institution.

The early skepticism and doubt as to the wisdom of attempting to maintain under one jurisdiction colleges for liberal culture and schools for distinctly professional ends have been replaced by the conviction that it is not only feasible but essential. The historic antagonism between the academic and the professional has given way to tolerance, and tolerance in turn has been succeeded by coöperation.

Each decade brings a fuller participation of universities in professional education. The trend is unmistakably toward incorporating within the systems of higher education facilities for education for all professions necessary for the public good. By responding to this trend, our universities are adding new chapters to their usefulness. *They have placed culture and professionalism in a coöperative rather than a competitive relation.*

II

The graduates of professional schools of yesterday entered a fairly simple occupational situation. Graduates of professional schools of to-day enter an exceedingly complex occupational situation.

Professions, formerly complete units, have been divided, re-divided, and divided again. Each new fractional part of the unit profession has become as extensive and exacting as the profession from whence it originated. As illustrated by the field of dentistry, the development of levels has accompanied this process of division. Dentistry was a unit profession only thirty years ago. Now it embraces at least fifteen different callings representing at least two distinct levels. In the highest level, there is the dentist, the orthodontist, the research dentist, and the dental surgeon. The other level, which may be characterized as the middle level, includes the dental nurse, the dental mechanic, and the dental hygienist.

The same process of subdivision, and the development of levels, has occurred in medicine, law, engineering, business administration, and education; in fact, in all the professions.

If one were to generalize, it is fair to say that individuals, in the main, do not pass from the pursuits of one level to those of another level. Each tends to be bounded by its own traditions and requirements. A proficient dental mechanic does not become a dentist, nor a contractor an engineer, nor a law clerk a jurist.

We dwell upon these developments because professional schools frequently do not recognize the differentiation between the middle and the higher levels. The failure to recognize this differentiation is one of the gravest problems in professional education. An illustration may be helpful. There is almost universal dissatisfaction with the colleges of agriculture, engineering, and commerce, particularly as found in our state-supported universities. Farmers condemn colleges of agriculture as being too theoretical, and agriculturalists condemn them as too practical. Some engineers condemn colleges of engineering as being too theoretical, others as being too practical. The same criticisms are made of colleges of commerce and business administration. Both types of criticism should be heeded.

Those who condemn professional schools as being too theoretical are thinking of the middle-level occupational groups, characterized by the need of technical proficiency. Those who condemn professional schools as being too practical are thinking of the highest-level professional

groups, characterized by the need of education in the fundamental, as well as the applied sciences, in which training in research must play a conspicuous part.

If professional schools are open to any criticism at this point, it is that they have attempted to train both the middle and the highest level professional groups. In so doing, they have struck an average between the requirements for the two levels. Where this has been done, failure to meet the needs of either group has been inevitable.

The future requires that a clear differentiation be made between the two levels, and that universities confine their efforts exclusively to the highest level. For the country as a whole, reorganization is needed most acutely in colleges of agriculture, commerce, engineering, and dentistry. Where these colleges are on an undergraduate basis they must give way to schools, essentially "graduate" in character, requiring for entrance sound general collegiate and pre-professional education.

To meet the needs of the middle-level groups of semi-professional character, new institutions will have to be established with curricula extending probably two years beyond the ordinary four-year high school course. Perhaps junior colleges, so rapidly developing in the West, will meet this need. Universities have no direct responsibility for education for the semi-professions, except to promote the establishment of institutions for these ends.

The essential function of universities, in so far as professional education is concerned, is education for leadership, including the highest type of practitioners as well as research workers.

The participation of universities in both the middle and higher levels leads to an unnecessary dissipation of resources and, even more important, robs society of the leadership so acutely needed.

III

The curricula of the professional schools of yesterday were based upon instruction in the applied aspects of the basic fields of knowledge. Professional schools of to-day are attempting to build curricula from living, functional situations in which the solution of problems plays an important part.

Under the older conception of deriving professional curricula from the practical aspects of the fundamental arts and sciences, we have witnessed the development of many series of applied subjects, illustrated by engineering, business, and household mathematics; and industrial, social,

and educational psychology. Through patient study and research in each of these applied fields, an extensive content was developed. In many instances, this material became so voluminous as to eliminate the possibility of mastery by any group of professional students in the time at hand. And, it assumed such a logical arrangement that it bore little relation to the solution of problems arising in professional situations.

The case method, in legal education, became a welcome substitute for many of the so-called applied subjects. This method has made a profound contribution to the theory of professional education. There soon followed increased use of clinics in medical education; demonstration schools in the education of teachers; and field work in engineering education. Now, a new movement is emerging, variously designated as job analysis, occupational analysis, or professional analysis. It represents an attempt to analyze the actual work of practitioners in order to determine what they must *know* and what they must be able to *do*. Elaborate analyses have been made or are now under way in business administration, dentistry, pharmacy, engineering and education.

We recognize that this movement represents a forward step in professional education. We see reason in the hope for certain contributions. As the result of such analyses, we may be assured that at least the minimum essentials will be included in the professional curricula. The length of professional courses may be reduced by the elimination, or curtailment, of non-essential elements. Differentiation may be made between the knowledge and skill necessary to enter a profession and the added training which can be given more profitably after one has a basis of experience.

But the whole procedure must not be accepted without reflection and evaluation. In many of the analyses now being made, there is a striking tendency merely to make the obvious explicit or to penetrate deeper into the technical aspects of the work performed. The result is a picture of the profession correct in line and form, but entirely lacking in color, action, and attitude. Depressing as it would be to look at such pictures of the professions, to use them exclusively as foundations for education would be a calamity.

To be appropriate for the professions, occupational analyses must include what may be characterized as *marginal responsibilities*. By way of contrast with *technical responsibilities* they are of a higher order, more remote and less concrete. But it is obvious that they have meaning and reality, and that they are present in every profession. In the medical profession, they may be illustrated by the physician's responsibility to

combat quackery and public exploitation by those improperly prepared, to promote social hygiene, sex education, and community health and recreation, and to use his matchless opportunities to foster home and family integrity. In business administration, we may mention business ethics, problems growing out of the increasing jurisdiction of state and nation in private enterprise, and questions arising from complex and involved international relations. In addition to these marginal responsibilities, in all the professions there are the common problems of civic leadership which society has a right to expect from all graduates of professional schools.

Typical analyses of the professions are likely to reveal a picture of a technician only. By including the marginal areas, the picture is modified, and the technician becomes, in addition, a social leader, an economist, a statesman, or a policy maker. To build a program upon the assumption that the professional worker is only a trained technician is to limit the curriculum to subjects and experiences directly related to very technical professional practices. To build a program based upon both technical and marginal responsibilities is to include the interpretative subjects necessary for social intelligence and leadership: history, literature, economics, sociology, philosophy, and the arts. A happy day in the annals of professional education when this point of view prevails!

Within the soul of every man and woman under training for the professions, a vision of great usefulness, in terms of discovery or service, has been entertained. The university professional school offers rich opportunities for the realization of this vision by making it possible to add to the professional course those fields of knowledge which will deepen human experience, widen sympathies and appreciations, and reveal a larger world.

MUSIC MEMORY CONTESTS

By THOMAS H. BRIGGS
Professor of Education, Teachers College

A novelty of importance to one phase of education is the music memory contest. It has long been a popular game for small groups to guess the names of musical compositions when snatches were played; the new contest merely extends the idea to include larger groups, especially of pupils from the sixth grade through the high school, with systematic preparation in regular class work. Usually adults are involved, through extensive newspaper publicity and through attendance at the contest, where they hold a supplementary competition among themselves.

Initiated in 1916 by Mr. C. M. Tremaine, director of the National Bureau for the Advancement of Music, the contest has spread rapidly all over the country. Promoted by this bureau, and later by Community Service and other organizations, contests have been held in some three hundred or more cities and in numerous counties, with several statewide final contests directed by departments of public instruction. One promising fact is that the contest when once held arouses such interest that it is invariably conducted again the following year.

The popularity of music memory contests is soundly based. Enjoyment of music is an important means of achieving one of the seven main objectives of education. Appreciation, which in the schools has been subordinated to production, has always been important for all people; and this importance is emphasized by the recent great increase in the opportunities to hear good music—not only in concerts but also on victrolas, mechanical player pianos, and the radio. Contests are not a substitute for courses in appreciation, but they demand and facilitate such instruction, and will probably result in a larger election of music in high schools. They take advantage of the common interest in games and the natural spirit of competition, and provide, what class instruction frequently does not, some degree of activity on the part of the listeners. It is the hope, of course, that the easily secured extrinsic interest will develop into an intrinsic interest in music itself.

Every one likes music of some sort, and it is believed that there is dormant in most people a possibility for liking even better music if they

have the opportunity of hearing it and some instruction leading to appreciation. It is probable that incidental and fortuitous hearing of music has resulted in far more knowledge than is generally thought. Knowledge itself and appreciation range widely in their meanings. One may have knowledge that leads merely to recognition of a composition when heard, that enables one to recognize major or minor parts, that permits one to anticipate what comes next after each part is played or sung, or that makes possible reproduction from memory. Appreciation ranges from mere sensuous enjoyment to a full understanding of all the technical elements of composition and performance. Consequently there is hardly a limit to the possibilities in training for appreciation, certainly none for that in preparation for a popular contest.

The National Bureau for the Advancement of Music has promoted memory contests by the offering of prizes and the publication of numerous bulletins, a list of which may be had on application.[1] One of these bulletins contains a suggested list of one hundred compositions most frequently used in forty representative contests, and a supplementary list of one hundred selections recommended by six ex-presidents of the Music Supervisors' National Conference.

That these lists are of great influence is seen by a comparison with them of two tabulations, one by Miss Edna McEachern of the selections used in one hundred miscellaneous contests, and the other by the writer of those used in twenty-two later secondary school contests, nine city and thirteen statewide.[2] In the 576 selections listed by Miss McEachern, 99 per cent of the first 100, appearing 82 to 14 times, are in the Bureau lists. In the 353 selections listed by Briggs, 89 per cent of the first 82, appearing five to 15 times, are in the Bureau lists. These high correlations, especially when it is noted that lists from two contests in a number of places are tabulated, indicate that the Bureau lists have been to a very large extent copied or that there is a remarkable unanimity of judgment by music teachers of what selections are appropriate for contests. The fact that all but one of the selections most commonly used in secondary school contests have also been used, most of them with great frequency in contests by younger pupils, suggests a strong influence by the Bureau, rather than independent judgment. Independence is to be found, however, in the large number of additions, many of which appear equally or even better suited for their purposes.

[1] 105 West 40th Street, New York, N. Y.

[2] The statewide contests were Indiana (1923-1924), Kansas (1923-1924), Michigan (1923-1924), Montana (1924), North Dakota (1923), Ohio (1924), Pennsylvania (1923-1924), Texas (1923-1924), Oklahoma (1924), and Tennessee (1924).

That readers may see the type of music compositions used in the contests, the thirteen most frequently appearing in the Briggs tabulation are listed, with the percentage of their appearance in the McEachern tabulation.

Composition	*McEachern Percentage*
Grieg: *Morning*	57
Dvořák: *Largo,* from *New World Symphony*	63
Beethoven: *Minuet in G*	65
Schumann: *Traumerei*	78
Grieg: *In the Hall of the Mountain King*	43
Mendelssohn: *Spring Song*	75
Grieg: *Anitra's Dance*	70
Mascagni: *Intermezzo,* from *Cavalleria Rusticana*	43
Saint-Saëns: *The Swan*	74
Wagner: *Pilgrims' Chorus*	49
MacDowell: *To a Wild Rose*	82
Rubenstein: *Melody in F*	58
Schubert, Franz: *Andante,* from the *Unfinished Symphony*	38

In a few instances good preparation for the contests, as well as guidance for the teaching of music appreciation, has been insured by pamphlets, supplementing several excellent books, that give useful information regarding the compositions to be used. From two of these pamphlets illustrations are quoted.

MOLLY ON THE SHORE

Grainger

Did you ever, in your whole life, hear anything so jigglety-pigglety-wigglety? Never before was there such a rollicking dance. Hopping, skipping, kicking, bending forward and backward, swinging the girls round and round; then all together jumping about in a circle; breaking away in couples and going like mad, some laughing, some shouting and everybody out of breath, but keeping on without any let-up. Certainly there's nothing like it outside of Ireland.

There are two very short tunes, or, perhaps, it's just one tune in two pieces. The first piece is played over and over for a while in almost every way one could think of, and then the other piece is given a chance. Then, first one and the other almost at random—there is so much excitement—and louder and louder as the dancing gets more furious. Then when everybody, including the fiddler, is about exhausted it quiets down and stops with a bang.

This is a real Irish folk dance, fixed up by Mr. Grainger in his own way, which is quite unlike that of any other composer. It is a jolly piece to close our list with.

Reed, Frank L., "Music Memory Stories."
University of Texas Bulletin, 1923.

PEER GYNT SUITE (Pair-gint)

Edward Hagerup Grieg (Grēg) (1843-1907), Bergen, Norway.

Grieg's life, after a few years of study, was among the people of the countryside. His music reflects such incidents and happenings as we may imagine to have occurred in the quiet parts of Norway. It is music reflecting the merry-making of the people; the stories of a country folk; the joys and sorrows of their lives. It is music of moods and music vividly descriptive.

A *Suite,* as a musical term, at first thought, suggests a set of dances. In this instance it means a number of pieces that work out an idea in different divisions. Grieg prepared such a suite to be used as incidental music with Ibsen's drama named after the chief character in a Norwegian folk story, *Peer Gynt.*

Morning—Part I.

The first number of the suite is called "Morning." Peer Gynt was a queer boy, an aimless dreamer, who loved to spend his nights in the mountains. Grieg may have pictured him as awakening one morning to find himself upon a high cliff. The sun is just beginning to make the east beautiful with the red and yellow and violet rays as they shoot through the gray morning clouds; the dewdrops fall from the glossy leaves; the birds are calling sleepily to each other. On one side, far below, the sea stretches away; on the other are the open fields bathed in misty light. Familiar sounds are heard; the dawn grows lighter; the birds begin to sing; the breezes whisper to each other among the branches; the sound of bells comes up from the fields below; the sun shines out over all.

There is but one prominent motive in the selection. This is a simple pastoral tune much like what we might imagine the shepherd would play to his flock. As this is continually being repeated, the composer has changed or elaborated it in many ways. By this means he secures variety in his composition. The harmonies all working upward convey the idea to sunrise.

Pennsylvania Music Memory Contest.
Columbia Graphophone Co.

PURPOSES

Like other subjects in the curriculum, music has often had its purposes stated in terms so general as to give to practice little or no direction. One may approve as worthy purpose, "to elevate mood, to purify discernment, and to heighten spiritual energy," but when he comes to laying out the details of a course of study or planning a lesson he will gain from it small help. For music memory contests, however, Mr. Tremaine, director of the National Bureau for the Advancement of Music, has proposed a directive statement of purpose, "to arouse the interest of the child so as to increase the receptivity of his mind to the knowledge it is sought to impart." In the belief that a statement of purposes in more detail will prove of aid to those directing music mem-

ory contests, the following are proposed. It will be evident that to a large extent they are equally applicable to the teaching of phases of music appreciation.

1. *To Enable Pupils to Share the Inheritance of the Race.* This purpose is common to all subjects. Even a small knowledge of the field reveals its richness and its complexity. As music is a common language, all occidental nations have contributed directly, and other nations have contributed indirectly, especially during the past two centuries, to inheritance that is ready to be claimed through knowledge and appreciation. This inheritance is composed primarily, of course, of songs, with their verbally expressed sentiments, and of compositions for instruments of all kinds; and, to a less degree, of the interesting elements of technique and media that make them possible. From the vast amount of this rich inheritance music teachers must select what is most important for enjoyment by pupils and for intellectual understanding, what is possible in the time available, and what may be taught successfully to pupils of various ages.

2. *To Familiarize Pupils with Desirable Music in the Hope That They Will Demand More of It.* It cannot be urged too frequently or too strongly that whatever the standards of taste of specialists, there is no success in the teaching for appreciation of any piece of music unless the result is that the pupils want and demand more of the same kind. Traditions in the United States do not predispose most of our pupils to a desire for good music, and even now, though conditions are rapidly improving, they hear far too little of it. The music memory contest, using the instinctive desire to compete and to manifest mastery, attempts first of all to familiarize pupils with good music. That this is an extrinsic interest, an interest in the contest rather than in the music, is manifest, but it is an interest nevertheless, and if wisely directed may become intrinsic. There is a widespread belief on the part of music teachers that one has only to hear good music to like it. This is only in a measure true. Few persons can make giant strides up the road of æsthetic appreciation, and such appreciative advance as is made needs to be fortified by intelligent understanding. To make extrinsic interest intrinsic, then, a music teacher needs to present selections only a little in advance of the standard held by pupils, and to supplement the presentation by details that will be understood by them as contributing to enjoyment. So far as possible, some degree of success should be assured to each and every pupil,—not only assured but also recognized, for the recognition by others of one's success is a powerful incentive to further interested

effort. Too frequently in music memory contests, as in those in other fields, attention is focused on the ablest pupils, who are early selected and further trained for other contests. The aim of democratic schools is to improve every pupil. The success of a music memory contest must be measured by the extent to which it does this.

3. *To Break Down Prejudice against Music and to Popularize It.* This purpose, closely related to the preceding one, is of sufficient importance to demand separate statement. Besides the instinctive interest in a contest, there is a powerful incentive in group activity. The larger the number of pupils that can be involved with enthusiasm, or even with interest, the more any existing prejudice against music, almost inevitable on the part of some, will be broken down. It should be obvious, as previously pointed out, that this interest will be maintained chiefly by success. This may to some degree be manifested, even for the less gifted pupils, by matching each one against himself, by challenging him to improve his record. Simple graphs, such as are taught in the mathematics class and frequently used in such subjects as spelling, may well be utilized for both individuals and groups. Interest may thus, and by other means devised by inventive teachers, be maintained until good music is popularized,—that is, possessed by all the group.

4. *To Afford Criteria.* Matthew Arnold pointed out in his *Essay on Criticism* the great value afforded by the possession of samples of the best literature to the formulation of good taste and the evaluation of other selections. No less is this of value in the field of music. The standards of music taste in the majority of people is doubtless far below what it might be because of ignorance of what is better but still possible of enjoyment. The experience of countless owners of phonographs is an illustration. Beginning with the most sensuous, sentimental, and even vulgar records, they have by degrees discarded them for ones proved better to them by repeated hearing. It should be noted that usually the change comes by degrees and that the superiority must be recognized by those who grow, rather than merely by those who have already grown. Patience and the ability to recognize a pupil's point of view is nowhere more important than here. Many pupils may be disposed to attempt understanding and appreciation of a selection within their range by the knowledge that it is generally accepted as a standard of its type. The possession of *The Keys of Canterbury* as a criterion of folk songs, of Sousa's *The Stars and Stripes Forever* as a criterion of marches, or of Lieurance's *By the Waters of Minnetonka* will go far toward not only making compositions of similar grade acceptable, but also toward mak-

ing advance possible to even higher standards. These, it may be ventured, permit of more thorough enjoyment even of lesser compositions. After criteria are presented they should be repeatedly used as touchstones of other compositions. It is the duty of a teacher to insure that this is done. If the criterion proves inadequate with pupils, another probably on a lower level must be used.

5. *To Make Later Rehearings of the Same Music More Pleasurable.* With the majority of people, especially with amateurs, there is more pleasure in hearing music that is somewhat familiar than in hearing the new. This is due largely to the complexity of the elements that make up music. With some degree of familiarity a listener is free to give his attention to the composition, the theme and its development; to the quality of the performance; to the interpretation; to the instrument used; to a comparison with other compositions, performers, interpretations; etc. Moreover, there is a tremendous satisfaction in anticipating the next phrase or theme or movement, and then having that anticipation gratified or corrected. Training for music memory contests permits of all this. It should be presented and proved to pupils and consciously utilized in teaching. A fairly familiar selection may hold the interest over and over again, thus deepening and enriching its impression, if the attention is each time directed to one of the important factors of enjoyment. The playing may be interrupted from time to time that the anticipations of what comes next may be expressed and tested. Pupils thus learn methods of listening as well as touchstones of good music.

6. *To Furnish a Common Background for Reference.* When a teacher wishes to illustrate any special element of music—such as tempo, accent, phrasing, type of composition, peculiarity of an instrument or medium, or characteristic of a historical period or composer—it is highly desirable that the class have in common an acquaintance with compositions to which reference may be made. In choosing selections for a music memory contest, therefore, one of the criteria should be the comprehensiveness of details of appreciation that are illustrated, details that it is valuable to emphasize later or at the time.

7. *To Give a Knowledge of What May Interpret or Express a Mood.* One of the important functions of music is to express for one who does not have the native gift—and for those who do, for that matter—moods that may possess him. An unexpressed mood is usually futile and always tantalizing; crude original expression gives some satisfaction, it is true, but poor when compared with what is felt. More adequate and satisfying, leading in some cases to action and in others to catharsis, is

the expression through singing, playing, or reproducing on a mechanical player of some sort, the appropriate art of others. But to get this kind of satisfaction one must have a wide knowledge of compositions; and this is given through training in music, especially for the group through preparation for a memory contest. In such training pupils should be shown how they may express their gaiety with Grainger's *Molly on the Shore,* their depression and comfort through Mendelssohn's *Consolation,* their sentiment through Nevin's *The Rosary,* their romance through Rimsky-Korsakov's *Scheherazade,* with appropriate options for various shades of each mood. It follows, naturally, that music should be used, as it often is, to express group mood—of the glory of victory, of patriotism, or of sorrow and reverence, and that pupils should be led to understand and appreciate this important function.

8. *To Integrate the Group.* Much has been written in the theory of education of the importance of this "making one" of the individual with others through the common possession of knowledge, ideals, and attitudes; but little of its possibilities has been consciously attempted. Integration through music, as is possible for a large number of pupils through preparation for the memory contest, has three phases. First is the binding together of the members of the group by knowledge of the same pieces of music, making possible their use for the expression of common moods and emotions, by inducing at the same time the same moods or emotions, and by a common effort of pupils, who may be widely separated through elections of curricula and courses, to achieve something not only for themselves but for the class or the school in superior contests.

Second is the integration with other people of taste and culture. For pupils to know the same music as cultured adults makes possible certain contacts; for them to like the same music adds immeasurably to the possibility. Nothing so draws people together as a common emotion, a common feeling about matters that involve interests and tastes. It is one of the important functions of the school to enable its pupils to make satisfactory contacts with their elders; it is highly desirable that these contacts be possible with adults of the highest possible culture. The music memory contest seeks to give the information and the attitudes that are necessary. When the contest also involves, as it frequently has done, the adults of the community in the preparation, in attendance, and in a supplementary competition, it makes desired contacts more probable.

The third phase of integration is with people of other lands and of other times. Just now when prejudices are strong against the people of

several other nations it is well for our pupils to know that great music, which they themselves enjoy, has been produced and is enjoyed similarly or in a superior measure by peoples whom for other reasons they have learned to hate or to despise. If they know that when twenty-eight foremost musicians, only one a German, were asked [3] to name the ten musical compositions that they considered greatest, sixty-one per cent of the votes were given to German compositions, pupils are likely to modify extreme feeling. If they love the *Song of the Volga Boatmen* or the *Hungarian Rhapsodie No. 2* or the *Indian Lament*, they may understand that there is much good in people whom, for one reason or another, they previously have looked down on. Young America is too prone to think that all good comes from his own country and is produced at the present time. His attitude may be improved through a knowledge and respect that integrates him with the past through *Ein Fest Burg*, Schubert's *Serenade*, Handel's *Largo* from "Xerxes," or Haydn's *Surprise Symphony*. Of course, results in the matter of integration are more likely if they are definitely sought.

9. *To Relate Music to Other School Subjects.* It is possible and wise through preparation for a music memory contest, as in all good teaching of music appreciation, to break down any notion that music is a subject independent of all others, and hence to some pupils unimportant, to show that all knowledge is related, and to involve other subjects of the curriculum in coöperative work. Subjects that especially invite articulation, correlation, and coöperation are literature, which not only is often set to music, but also offers interpretation of the same moods; history, which gives meaning, understanding, and sympathy for music composed under peculiar limitations or for special occasions (e.g., Chopin's *Marche Funebre* or Dvořák's *Songs My Mother Taught Me*); geography, which offers explanation of many characteristics of some compositions and gives a key to their relation with others (e.g., folk songs); and other fine arts, both plastic and pictorial, which attempt through their media to express similar, often identical emotions (e.g., cf. Boecklin's *Isle of the Dead* and Rachmaninoff's musical interpretation).

10. *To Explore the Interests, Aptitudes, and Capacities of Pupils.* Though progress is undoubtedly being made, music has been neglected in the schools of the United States. Sometimes not offered at all beyond the most elementary and crude chorus singing, it is often taught by those who have preparation and tastes far from adequate for the importance of the subject. And those adequately trained too frequently are concerned

[3] *Etude*, 42: 149 ff.

only with the relatively small number of pupils who can "produce," rather than with all who "consume," emphasizing with the former only the technical elements of the subject. For these and other reasons many pupils fail to discover interests in good music which might be great, capacities for appreciation, and aptitudes for specialization. To this extent they have failed not only of a well-rounded education but also of knowing that they had gifts for one of the important phases of leisure time activity. Preparation for music memory contests, involving those who have had little or no music experience as well as others, may do much to search out the interests, aptitudes, and capacities of all pupils.

11. *To Reveal to Pupils the Possibilities in an Important Field.* For such reasons as have just been stated numerous pupils have a very limited conception of what the field of music contains. It is fair to assume that practically every pupil likes music of some kind, that because of premature or undirected experience he has a prejudice against "highbrow" compositions, and there are unknown to him thousands of compositions superior to those which he enjoys, and that he can be led to respect, enjoy, and demand music of a higher level than he has yet attained. Preparation for a music memory contest furnishes the opportunity to reveal the vast number of compositions that he may enjoy, the many phases of enjoyment, and both his opportunity and his duty to attempt an understanding of what more experienced people have pronounced good. No one has a right to dislike until he has made an earnest and a sympathetic effort to understand. It is the obligation of a teacher, on the other hand, to find the level of appreciation already possessed by pupils, to choose for presentation compositions on that level or only slightly above it, to present them from the pupils' point of view with details that he understands contribute to enjoyment, and to proceed upward only as fast as the pupils can or will advance. A small advance with interest is better than a large one with resultant dislike. If music memory contests will reveal higher possibilities in music so as to break down existing prejudices against the subject, if they create a respect, interest, and desire for further experience in the field, and if they "lead on" to higher and better activities, they will have abundantly justified themselves as a part of our regular school work.

PROBLEMS

As students trained in the science of education have given to music a small amount of study compared with what has been applied to such

subjects as English and mathematics, a list of problems is appended. Some of them require only the rough experimentation of the classroom, involving the application of accepted theories of education, the facts of psychology, and the judgment of those who possess art as well as science. Others demand the application of the best scientific technique that has been developed. It is not assumed that the list of problems is exhaustive; but it may prove suggestive to workers in the field.

1. What compositions or types of compositions at first hearing are liked by pupils of different maturity levels?—There are doubtless great individual differences in pupils; but probably some compositions or types cannot be really enjoyed, without or even with instruction, until pupils reach certain levels of maturity. It is a reasonable hypothesis that melody may be naïvely enjoyed long before absolute music dependent on harmony, *Old Black Joe* before *L'après Midi d'un Faune* or Bach's *Mass in B Minor*. Even a list roughly standardized by methods more accurate than subjective judgment of a teacher would find many uses.

2. After various kinds and amounts of instruction, for what compositions or types of composition may liking be secured at various maturity levels?—There can be no doubt that many music compositions are taught with poor results merely because they are presented too early. Recent studies in literature have revealed pupil limitations previously unrecognized by teachers of English. A limitation recognized necessitates adaptation of selection and presentation. A scale of appreciation, in which a beginning has been made by Mohler and Trabue, is needed for many purposes.

3. To what extent is liking for music affected by the several elements of composition, rhythm, tonal beauty, melody, harmony, etc.?—To what extent is it determined by association with previous experiences or moods?

4. What effect on enjoyment with individuals at various maturity levels does the instrument for rendering have?—It is possible that a brass band rendering of a composition may be enjoyed before that by an orchestra, one by a trombone before that by a piano. It would be interesting and instructive to see what pupils prefer another medium of expression than that chosen by the composer. Do they prefer the *Evening Star* sung by a tenor or soprano, or played on the 'cello or mandolin?

5. To what extent does appreciation affect effort, "leading on" to active exertion for enjoyment or for skill in performance?—Under this head may be considered the use at home of victrola or radio, attendance at concerts, election of music courses, behavior in chorus, etc.

6. To what extent are compositions difficult to recognize?—Although some of the pamphlets directing music memory contests state that a list should contain selections both easy and difficult to recognize, there is in most lists examined probably too great a range. The first chords of Chopin's *Marche Funebre* or Dvořák's *Largo*, for instance, reveal what they are; but Saint-Saëns' *The Swan* is in no such degree easy. The ease of recognition may be determined by the words of a song, by a distinctive name (cf. *The Raindrop Prelude* and *Opus 13*), by a striking or reiterated phrase, by easily obvious movements, etc. Perhaps each memory contest should be confined to compositions of the same kind.

7. To what extent should a list be representative of different types of music (folk songs, art songs, symphony, or concerto; rhythmic, harmonious, or melodic; associative or absolute; etc.), of different nations, composers, periods, instruments, etc.?

8. How much knowledge and appreciation goes with recognition?—It is possible for a person to name a composition and yet to have no real knowledge of it or to hate it.

9. What is the optimum number of compositions for study in preparation for a contest?

10. What is the optimum number for use at the contest?

11. How long can interest be retained or increased in preparation for a contest?

12. What is the optimum length of selections to be used?—The attention span of pupils for music is both variable and short. It is possible that selections of the length of MacDowell's *To a Wild Rose* are better for a certain maturity level than those as long as *Liebestraum*. If selections are merely to be named in a contest, attention is likely to be focused on one distinctive element and to wander after it is recognized. If the contest demands recognition of any important phrase or movement, long and complex compositions will prove too difficult.

13. What is the nature of the best preparation for a contest?—It would be relatively easy by the use of devices to prepare even an unmusical person to make a respectable score in recognizing selections in most of the lists used in contests. (For instance, by emphasis on the anvils in the *Anvil Chorus*, the trumpets in the *Triumphal March* from "Aïda," or the reiterated *Hallelujah* from Handel's chorus.) Therefore, the question concerns not merely the preparation most effective for high scores but *best* for the higher ends desired.

14. To what extent are various devices effective in securing memory, appreciation, and retention?—Memory, as pointed out earlier, may be

recognition of distinctive or important parts, or of the whole; appreciation may be of varying degrees and intelligence; and retention should be more or less permanent.

15. In the contest should the whole of a composition be presented, or only significant phrases?—The answer to this question may depend on the selection—whether it is an unbreakable unity, like Mendelssohn's *Meditation,* or a composite like *Selections from Robin Hood* or Schumann's *Carnival.*

16. Are there other better means of testing than naming a composition?—Consideration should be given to the economical "new type examinations" used in other subjects.

17. What is the contribution of related information to the desired ends of recognition and appreciation?—Under related information are included biographical facts of the composer, date and circumstances of composition, anecdotes concerning performances, etc.

18. What is the relation of success in recognition to further understanding and appreciation?—Correlations should be made of scores in recognition with scores in understanding of the whole selection and its composition, in recall of themes, in ability to sing or hum melodies, in appreciation, etc. Such correlations would afford much important information concerning the success of memory contests.

19. What is the relation of success in a contest to intelligence and to alertness?

20. How may the accomplishment in a contest be utilized for continued enjoyment and education?

TENURE OF SERVICE OF TEACHERS (*Cont'd*) *

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THE LEGAL STATUS OF TEACHERS

With few exceptions, noted in other parts of this Report, teachers throughout the country are appointed on annual contracts. During this brief tenure they are subject to dismissal by the appointing boards of education for incompetence, misconduct in office, unprofessional conduct or conduct unbecoming a teacher, insubordination, neglect of duty, failure to comply with regulations, causes that render a teacher's service unprofitable, the best interests of the school, immorality, and any cause deemed sufficient. Although a wide latitude is thus afforded to employing authorities, the tendency on the whole is not to dismiss a teacher during the year of tenure except for immorality or gross misconduct. It is apparently safer and creates less friction to drop a teacher on the expiration of an annual contract. In such cases, of course, the teacher has no redress.

Where, however, dismissal takes place during the year of tenure, provision is generally made that written notice of charges be presented and an opportunity for a hearing be granted within a specified time. The right to appeal from the tribunal dismissing the teacher is generally provided, and an appeal may be taken to the county or state superintendent or state board of education, or, more rarely, to a special commission. In addition to this redress, since the dismissal of a teacher under contract involves a breach of contract, or, where permanent tenure prevails, an infringement of statutory provisions, the teacher may also exercise the ordinary legal remedies in such cases and bring action in the courts. It is pertinent, therefore, to enquire into the attitude of the courts in such matters by examining the statutes and decisions in a few typical states, including some where only annual appointment is permitted and others where permanent or indefinite tenure prevails.

In California the Political Code provides that "every office of which the duration is not fixed by law is held at the pleasure of the appointing

* The first part of this article appeared in the October number.

power," while Section 1609 of the School Laws provides for the automatic reëlection of teachers from year to year unless notified, on or before June 10th of each year, that services will no longer be required. With the exception of San Francisco, where permanent tenure is provided, indefinite tenure as prescribed by Section 1609 is the rule, although the cities generally require a period of probationary service. Teachers may be dismissed for any of the causes mentioned above or by revocation of their certificates for similar causes. In the first case an appeal may be taken to the county superintendent. When a certificate is revoked, notice of charges must be given and a fair and impartial hearing before the board of education be granted, at which evidence may be taken under oath and the teacher may be represented by counsel. The decision must be based on the affirmative vote of at least four of the five members of the board. The courts [1] would not by *mandamus* order the reinstatement of a teacher who had been dismissed without notice or hearing, provided the dismissal had been approved by the county superintendent on appeal as provided by Section 1698 of the School Laws; action could, however, have been taken for breach of contract and payment of salary still due. It has even been held [2] that a teacher on probation might be removed without notice or hearing, though the city was held to be liable for the balance of salary due until the expiration of the term of the appointment. In another case [3] where a teacher was dropped at the end of the year with due notice, from a school system, where the privileges and requirements of the civil service system had not yet been adopted, the action of the board of education was upheld, and the court expressed the following opinion:

> The matter of providing instructors in the public schools has not as yet been deemed appropriate by the law to be placed under civil service rules, and there appears very good reason for the exception. The desire of the governing bodies of school districts, presumptively at least, is to secure the best of instructors for the students, and while a teacher or instructor once employed may, so far as his or her general qualifications are concerned, be competent it may so happen that instructors or teachers may be available who possess more extensive knowledge and under whose instruction better educational results can be secured. If having once employed a teacher, a board of education is powerless to dislodge him from his position, except for cause. Then, when the opportunity is

[1] *Taylor* v. *Marshall* (1910), 12 Cal. App. 549.
[2] *Barthel* v. *Board of Education of San Jose* (1908), 153 Cal. 376.
[3] *Morse* v. *Board of Education of San Diego* (1917), 34 Cal. App. 134. See also *Catania* v. *Board of Education of Oakland* (1918), 37 Cal. App. 593, where it was held that "in the absence of constitutional or statutory provisions, however, the power to discharge is always absolute."

presented for a betterment in the direction suggested, nothing can be done and the best interests of the school will consequently suffer.

Nor is the situation markedly different from the point of view of the courts in San Francisco, where teachers are protected by a permanent tenure provision. The determination of the rights involved is similar, but the extent and kind of relief afforded is different because of the permanent tenure law. This provision gives the teacher a right to her position as long as she continues competent and faithful, and protects her from the arbitrary action of the board and from the personal or political interests of changing members.[4] *Mandamus* ordering reinstatement could accordingly be granted. But the protection does not guarantee a position of permanence in the same class of a school and at the same salary. In other words, the action of the board of education is not restricted in the assignment of a teacher within the grade of school for which she holds a license. The courts have interpreted the permanent tenure provision to mean that "the legislature certainly intended to leave such freedom of action in a board of education as would permit it in its discretion to make such assignment or transfer as is complained of in this case."[5] The courts recognize the power of the board of education to administer the schools for their best interest, and this includes the right to assign or transfer teachers and to dismiss teachers for cause, but the courts will enquire into the reasonableness of such cause.[6]

Conditions in Illinois are virtually the same as in California with the exception of cities with a population of over 100,000. Teachers may be removed for cause during the term of their contract and have the right to appeal to county and state superintendents, and to resort to the courts in cases of breach of contract. The statutes do not, however, require notice of charges and hearing by the board of education or school committee prior to dismissal. To obtain relief, however, a teacher who regards the dismissal as wrongful may resort to the courts, which have, however, enquired into the reasonableness of the cause of dismissal and, in earlier practice, even submitted to the jury the question of a teacher's professional competence.[7] Causes which have been found by the courts to be reasonable grounds for dismissal have been incompetence, improper conduct, temperamental unfitness, neglect of

[4] *Kennedy* v. *Board of Education of San Francisco* (1890), 82 Cal. 483, 22 Pac. 1042; *Fairchild* v. *Board of Education of San Francisco* (1895), 107 Cal. 92, 40 Pac. 26.
[5] *Loehr* v. *Board of Education of San Francisco* (1910), 12 Cal. App. 671, 108 Pac. 325.
[6] *Stuart* v. *Board of Education of San Francisco* (1911), 161 Cal. 210.
[7] *Neville* v. *School Directors* (1864), 36 Ill. 71, 73; *School Directors* v. *Reddick* (1875), 77 Ill. 628; *Ewing* v. *School Directors* (1877), 2 Ill. App. 458.

duty, immorality, cruelty, intoxication, tardiness, insubordination, the best interests of the school,—all of these are now incorporated in the School Laws.

The changed attitude of the courts in current practice is well indicated in a case which arose under the provision of permanent tenure in Chicago. A probationary period of three years is required, followed by permanent tenure, subject to the rules of the board as to conduct and efficiency, and removal for cause after notice and hearing. A majority vote of the full board of education is necessary for dismissal, and the action of the board is final. The courts will interfere if the necessary guarantees of notice and hearing have not been granted. The latitude given to the board is well indicated in the majority opinion of the court in a recent case [8] in which a teacher was dismissed on account of membership in a labor union. The opinion reads as follows:

> By the statute the board of education in cities having a population of 100,000 or more is given complete control of the schools of the city. . . . A new contract must be made each year with such teachers as it desires to retain in its employ. No person has a right to demand that he or she shall be employed as a teacher. The board has the absolute right to decline to employ or re-employ any applicant for any reason whatever or for no reason at all. The board is responsible for its action only to the people of the city, from whom, through the mayor, the members have received their appointments. It is no infringement upon the constitutional rights of any one for the board to decline to employ him as a teacher in the schools, and it is immaterial whether the reason for the refusal to employ him is because the applicant is married or unmarried, is of fair complexion or dark, is or is not a member of a trades union, or whether no reason is given for such refusal. The board is not bound to give any reason for its action. It is free to contract with whomsoever it chooses. Neither the constitution nor the statute places any restriction upon this right of the board to contract, and no one has any grievance which the courts will recognize simply because the board of education refuses to contract with him or her. Questions of policy are solely for determination of the board, and when they have once been determined by it the courts will not inquire into their propriety.

The concurring opinion, however, insisted that the court under the provision for permanent tenure could prohibit a rule "which would be unreasonable, contrary to public policy, and on the face of it not calculated to promote the best interests and welfare of the schools."

In Michigan, North Carolina, Ohio, and Wisconsin, the local authorities, school committees, boards of education, and county superintendents have the right to dismiss teachers and the authority granting

[8] *People ex rel. Fursman* v. *City of Chicago* (1917), 278 Ill. 318, reversing (1916) 199 Ill. App. 356.

teachers' certificates is empowered to revoke them for the usual causes. The courts when called upon will consider whether the legal requirements for dismissal or revocation of certificates, that is, notice of charges and hearing, have been observed. But, in a contract action the courts will try the facts whether a teacher is incompetent or guilty of the charges brought against him. In Michigan the law provides for an appeal to the county probate court in cases of revocation of certificates, and in North Carolina the Superior Courts "may review any action of the county board of education affecting anyone's character or right to teach." In Ohio the courts decided that a board of education may try a superintendent even though two of its five members brought the charges and a third was a necessary witness against the superintendent.[9] On the other hand, in the same state in an action for salary brought by a teacher who had been dismissed for immorality, the jury considered both the facts of the case and whether due notice of the charge had been given.[10] The general practice, then, in these four states appears to be the same,—that the courts will not interfere with the exercise of discretion by the statutory authorities provided that they have acted within their jurisdiction and have conformed with the statutory requirements of notice and hearing; but in an action for breach of contract, the wrongfulness of the dismissal will be passed upon and the determination of the facts in the case will be left to the determination of the jury. The position is well summarized in a Wisconsin case in which a teacher was dismissed for failure to perform his duties under his contract, and in which the charge to the jury, approved later by the court on appeal, was as follows:

> As a general rule a teacher may be removed or dismissed before the expiration of his term of service for any cause that renders him unfit to be a teacher in the public schools so that the best interests of the school require that he should be removed or dismissed, as for incompetency in teaching, failing to manage or control the school, or failing in any respect to perform his obligations as a teacher, from which arises disorganization in the school work. You are to determine in this case whether the discharge of the plaintiff by the school board was justified.[11]

In Oregon the Laws (1913, Ch. 172, Section 1, Subdivision 23) provide that "if a teacher is unjustly dismissed, he may take an appeal from the action of the board dismissing him to the county superintendent and thence to the superintendent of public instruction, but for breach

[9] *Frederick* v. *Board of Education of Lakewood* (1910), 18 O. C. C. (N. S.) 435.
[10] *Schuck* v. *Board of Education* (1915), 92 O.S. 55.
[11] *Curkeet* v. *Joint School District* (1914), 159 Wis. 149.

of contract of teaching, the teacher or district shall have their ordinary legal remedies." Written notice of charges and a hearing are required, but the courts in interpreting the statutes have dispensed with these requirements on the basis that:

> The statute should be construed to mean that charges must be made and notice and an opportunity for a hearing given, before a teacher can be discharged for an act which does not amount to a breach of contract of teaching; but for a breach of the contract of teaching, the teacher may be dismissed summarily without a hearing because for that breach, in the words of the statute itself, the board shall have "the ordinary legal remedies," and the right of summary dismissal was ordinarily a legal remedy which was available before the statute was enacted.[12]

One consequence of this interpretation is that the courts will examine into the reasonableness of the ground of dismissal, e.g., marriage of a teacher.[13] This principle will probably not apply to Portland where the teachers are protected by a permanent tenure provision and right of appeal from the board of school directors to a special commission which is appointed annually by the judge of the county circuit court and whose decisions are final.

In New Jersey the Teachers Tenure of Service Act (1909) provides throughout the state for permanent tenure in any district after three years of probationary service; teachers may not be dismissed or have their salaries reduced except for just cause; written charges must be presented and a hearing must be conducted by the local board at which the teacher may be represented by counsel and all the formalities of a judicial trial may be pursued. From the decision of the local board the aggrieved party may appeal to the State Commissioner and to the State Board of Education. The courts have refused, even before the enactment of the Tenure of Service Act, to interfere until all the remedies provided by the statutes had been exhausted.[14] Recourse to these statutory provisions—trial by the local board, and appeal to the Commissioner of Education and the State Board of Education must be had first, but does not stop an aggrieved party from further resort to the courts, which will, however, only review the action of inferior tribunals by *certiorari*, that is, they will examine the records in the case for defects as to mistaken interpretations of the law and the extent of the

[12] *Foreman* v. *School District No. 25* (1916), 81 Ore. 587, 159 Pac. 1155.
[13] *Richards* v. *District School Board* (1916), 78 Ore. 621, 153 Pac. 452.
[14] *Thompson* v. *Board of Education* (1895), 57 N. J. L. 628, 31 ATL. 168; *Jefferson* v. *Board of Education* (1899), 64 N. J. L. 59; *Draper* v. *Commissioners* (1901), 66 N. J. L. 54, 48 ATL. 556; *Stockton* v. *Board of Education* (1904), 72 N. J. L. 80; *Montclair* v. *Baxter* (1908), 76 N. J. L. 68.

jurisdiction, but not for the weight of the evidence or the accuracy of the findings.[15] In general, then, discretion in cases of dismissal is left to the constituted education authorities and the courts will only interfere (1) where the inferior tribunal had no jurisdiction or had exceeded its jurisdiction; (2) where it acted under a misconception of the rules of law applicable to the fact in the case; and (3) where the dismissal was arbitrary or in abuse of discretion.

The procedure in New York State confirms that in New Jersey. Here the laws provide that no teacher shall be dismissed except for neglect of duty, incompetence, immorality, or other cause deemed sufficient by the Commissioner of Education on appeal. Teachers may not be dismissed arbitrarily or reduced in rank. Notice of charges and the opportunity for a hearing must be granted.[16] The remedy by appeal to the Commissioner of Education must be exhausted before the courts will take action, and then the courts will grant a writ of *certiorari,* not to review the evidence upon which the decision of the local authority and the Commissioner was based, but only to enquire whether they had jurisdiction, had acted within their jurisdiction, and had exercised their discretion without abuse. Thus the court held in a case[17] in which a teacher was removed for neglect of duty that:

> Of course, if the charge preferred against the relator upon which she was removed, was not one on which the defendant was authorized to remove her, then the action of the defendant in removing her would be a nullity, and she might be reinstated by *mandamus,* but that is not this case. She had no absolute right to hold her position. The Legislature might have provided that teachers be removed at will without a cause assigned, or charges, or a hearing. . . . But in order to prevent abuse, for political or other purposes, of unrestrained power, the Legislature saw fit in its wisdom to secure teachers against removal excepting upon charges, among others, of neglect of duty. Having been removed on a charge of neglect of duty, if the relator has any grievance, it is with respect to the sufficiency of the evidence to sustain the charges, and on that question she had her statutory remedy by appeal to the State Commissioner of Education . . . which she should have exhausted before invoking the aid of the court.

The tendency in New York State is, accordingly, to leave to the authorities charged with the conduct of education the determination of

[15] *Draper* v. *School Commissioners* (1901), 66 N. J. L. 54, 48 Atl. 556; *Board of Education of Flemington* v. *State Board of Education* (1911), 81 N. J. L. 211; *Nicholson* v. *Board of Education* (1912), 83 N. J. L. 36; *Gowdy* v. *Board of Education* (1913), 84 N. J. L. 23, 89 Atl. 1135; *Board of Education* v. *Decker* (1915), 87 N. J. L. 431.

[16] *People ex rel. Callahan* v. *Board of Education* (1903), 174 N. Y. 169, 66 N. E. 674; *People ex rel. Murphy* v. *Maxwell* (1904), 177 N. Y. 494, 69 N. E. 1092.

[17] *People ex rel. Peixotto* v. *Board of Education* (1914), 212 N. Y. 463, 106 N. E. 307, affirming (1914) 160 App. Div. 557, 145 N. Y. Supp. 853, reversing (1913) 82 Misc. 684, 144 N. Y. Supp. 87. The quotation here cited is from 160 App. Div. 557.

professional standards of competence, neglect of duty, or immoral conduct, and of the reasonableness of the grounds of dismissal.

With few exceptions, therefore, the practice of the courts is to limit themselves to an enquiry into the question whether the statutory provisions governing dismissal during appointment, whether for a term or under permanent tenure, have been met. So long as the law sets up a machinery for notice of charges, hearing, and appeal, the courts will investigate whether remedies so provided have been exhausted in a given case, whether the constituted authorities have acted within their jurisdiction, and whether they have not abused their discretion. It is by no means clear whether the courts will enquire into the reasonableness of the cause of dismissal, provided the legal procedure has been followed. Where the remedies have been provided by the laws and these have been exhausted, the courts will issue a writ of *certiorari*, on the basis of which the lines of enquiry here mentioned will be pursued, but the courts will not issue a writ of *mandamus* for reinstatement. The situation is different in cases of breach of contract, where an aggrieved party may resort to the usual legal remedies. There appears to be a fundamental tendency for the courts to base their practice on the principle that the state laws have set up special organizations responsible to the public for the conduct of education, including the administration of the appointment and dismissal of the teacher. Within these laws the constituted authorities must limit their jurisdiction, exercise their discretion, refrain from arbitrary action, and determine from the point of view of the interests of the public and the schools, the reasonableness of their procedure. This tendency renders all the more urgent the consideration of what are sound principles of a tenure of service law, the determination of an appropriate machinery for trial and appeal in cases of dismissal, and the establishment of clearly defined standards of professional competence, efficiency, and conduct. These are clearly professional and not legal questions.

A TEST OF ABILITY IN THE PRONUNCIATION OF WORDS

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The test herein described is one of several which have been devised for use in the study of reading ability in the elementary grades. The pronunciation test was constructed primarily as an instrument to use in the diagnosis of special difficulty in reading. For this purpose the test must (1) enable the examiner to compare a subject's gross achievement with some standard, such as an age or grade scale of averages, and (2) provide the means of detecting merits and defects in the subject's performance. Since standards for comparison of gross scores as well as suggestions for analyzing the pupil's responses are provided, the test may be used either for surveys of attainment or for more refined diagnosis.

CONSTRUCTION OF THE PRELIMINARY FORM OF THE TEST

In the preliminary form, the test consisted of five forms, each including 110 words. The words were selected so far as possible from the first 5000 most frequently used words in English as determined by Thorndike.[1] These words were first classified according to length, and from these groups selections were made of the most familiar words until the five forms, each composed of eleven groups of ten words of the same length ranging from 2-letter to 12-letter words, were completed. It was occasionally necessary to select words slightly less frequently used than the first 5000.

The five test forms were multigraphed. Two forms (Form I and some other one form) were given individually to each of approximately 1800 pupils in Grades 1 to 6, inclusive, in schools in or near New York.

Since Form I was given to every pupil it was possible to equate the words in any other form with the difficulty of a word on the first form. For each word on all forms the percentage of pupils of each grade who correctly pronounced it was computed. Since many of the words were pronounced by 100 per cent of the pupils in Grades 5 and 6, the final

[1] Printed in Thorndike, *Teacher's Word Book*, Bureau of Publications, Teachers College.

computation of the relative difficulty of the words was based only on the data for Grades 1 to 4 inclusive (approximately 1500 pupils). The following is a sample of such results.

PERCENTAGE OF CORRECT PRONUNCIATIONS, GRADES 1 TO 4

	Grade 1	*Grade 2*	*Grade 3*	*Grade 4*	*Average*
rise	43	75	85	90	73.0
only	51	91	98	99	85.0
play	76	95	99	99	92.0
here	63	90	98	99	87.5
fine	53	87	97	99	84.0
gone	56	80	94	96	81.5
cold	54	86	96	98	83.5
ball	57	88	98	99	85.5
book	53	94	98	100	86.0
away	67	92	98	98	89.0

On the basis of the final average per cent of correct pronunciations in the four grades, all of the 550 words were arranged in order from easiest to hardest. The middle of the list contained a relatively large number of words that were very nearly equal in difficulty and it was apparent that the test could be shortened somewhat without impairing its usefulness.

FINAL FORMS OF THE TEST

The final forms of the test were made from a list of 400 words comprising a satisfactory range in difficulty. There are four forms, each consisting of 100 words. Assignments of words to the forms were made to insure equality in difficulty at all levels and infrequent repetition of words with conspicuously identical elements in the same form. Facsimiles of the four forms are appended (pages 207 to 210).

Since the preliminary forms were multigraphed, whereas the final forms are printed, it was necessary to retest the material, especially to secure age and grade averages based upon the final instruments themselves.

Directions to Teachers. Following are the directions for giving the final forms of the test.

To give the test, first fill out all of the blanks (name, age, etc.) and then present the pupil with *another* form from which he is to read. Use the form upon which entries of age, etc., have been made to record the

GATES GRADED WORD
PRONUNCIATION TEST

Name ..... Grade ..... Age ..... Years ..... Months .....
School ..... Date ..... Total Score .....
Examiner's Name ..... Remarks .....

FORM 1

so	we	an	is	do	
as	go	us	at	or	10
the	not	did	can	hen	
how	may	out	son	net	20
king	here	door	ball	came	
grow	late	hear	east	year	30
every	about	after	broom	child	
paper	blind	peach	climb	point	40
window	family	bridge	lonely	scratch	
perhaps	plaster	harvest	servant	frighten	50
passenger	wander	eighty	counter	shepherd	
interest	chocolate	motion	citizen	elegant	60
dispute	portion	continue	mansion	brilliant	
conductor	brightness	punishment	guardian	restaurant	70
intelligent	construct	impatient	protection	temperature	
position	profitable	instrument	reverence	astonishment	80
irregular	schoolmaster	manufacture	revolution	unnecessary	
lamentation	community	examination	intelligence	national	90
satisfactory	illustrious	countenance	congratulate	preparation	
superstition	affectionate	substantial	philosopher	treacherous	100

NOTE. Pages 207 to 210 are reproductions, reduced about one half, of the four forms of the Gates Graded Word Pronunciation Test, copies of which may be purchased from the Bureau of Publications, Teachers College.

GATES GRADED WORD
PRONUNCIATION TEST

Name..... Grade..... Age..... Years..... Months.....
School..... Date..... Total Score.....
Examiner's Name..... Remarks.....

FORM II

go	he	am	ox	do	
of	no	we	as	if	10
rat	and	bat	red	end	
sit	why	ill	put	add	20
play	your	keep	duck	able	
find	cold	news	last	hope	30
think	began	tooth	chair	fairy	
heard	enter	grant	early	study	40
branch	woolen	rather	depart	empty	
fifteen	pattern	history	picture	thirsty	50
benefit	transfer	daughter	nation	telegram	
discovery	operate	margin	progress	principal	60
natural	junior	popular	vacation	departure	
education	guiltless	assemble	industrious	difference	70
necessary	threshold	criminal	reasonable	attraction	
delegate	information	unfortunate	independence	perceive	80
sacrifice	tremendous	cylinder	oppression	construction	
prosperity	anniversary	consecrate	unconscious	desolation	90
immediate	comparative	magnificent	distinguish	institution	
individual	existence	proposition	legislature	picturesque	100

GATES GRADED WORD
PRONUNCIATION TEST

Name ..... Grade ..... Age ..... Years ..... Months .....
School ..... Date ..... Total Score .....
Examiner's Name ..... Remarks .....

FORM III

it	by	at	be	on	
us	or	no	as	my	10
dog	day	his	run	get	
who	men	now	ate	has	20
much	doll	made	book	only	
feed	hold	fall	goes	word	30
green	train	river	other	floor	
build	wagon	front	class	lonely	40
ending	temple	stream	valley	summon	
cruel	torment	embrace	fortune	muzzle	50
avenue	respect	governor	department	spirit	
landscape	courage	straight	enormous	feature	60
harmony	jealous	direction	revolt	innocent	
candidate	discontent	hesitate	testimony	population	70
celebration	difficulty	courtesy	confusion	respectful	
comprehend	performance	audience	persecute	tributary	80
certificate	victorious	indignation	dignify	consequently	
reference	performance	conversation	inheritance	suspicion	90
familiar	acquaintance	circumstance	mountainous	prosperous	
organization	musician	distribution	discipline	perpetual	100

GATES GRADED WORD
PRONUNCIATION TEST

Name ..... Grade ..... Age ..... Years ..... Months .....

School ..... Date ..... Total Score .....

Examiner's Name ..... Remarks .....

FORM IV

to	if	me	in	up	
or	my	it	so	be	10
cat	was	man	one	ran	
pen	her	bad	ice	air	20
very	away	boat	just	call	
fine	gone	mine	wall	lady	30
drink	bread	dance	never	grand	
alone	uncle	wrote	habit	ready	40
corner	tailor	answer	moment	beauty	
sprang	chatter	throne	chapter	kingdom	50
creature	twilight	glitter	possible	eleven	
glorious	engineer	terror	electric	enterprise	60
attention	mercy	traitor	frequent	delicious	
furnace	adventure	temperate	impression	typewriter	70
expression	plantation	catalogue	providence	correspond	
considerable	temptation	cathedral	deliverance	remembrance	80
exploration	obedient	corporation	wretched	opportunity	
decoration	commonwealth	eloquence	contribute	observation	90
university	merchandise	conscious	atmosphere	conclusion	
curiosity	constitution	convenience	agriculture	simplicity	100

pupil's responses—successes and errors. The results are recorded as follows:

1. If the word is correctly pronounced, no entry or mark on the word is made.
2. If the child fails on the first trial, write the mispronunciation above the word.
3. If the child fails on the first trial, give a second trial. If he fails on the second trial draw a line through the printed word. If he succeeds on the second trial do NOT draw a line through the word. Thus:
   a. Success on first trial is indicated by an unmarked word.
   b. Failure on first trial is indicated by the mispronunciation written above the word.
   c. Success on second trial is indicated by one mispronunciation written above an unmarked word.
   d. Failure on second trial is indicated by a line drawn through the word. You do not enter the second mispronunciation. Never give more than two trials.
4. If the child does not respond, saying "I don't know it," etc., encourage him to try. If he will not, call it a failure and indicate this by drawing a line through the word. Thus, complete failure is always indicated by a line through a word; success by word not stricken out.
5. Disregard slight peculiarities of pronunciation. The question is: Does the child know this word? If he habitually mispronounces it because of the influence of training in a foreign tongue, a dialect, etc., that does not matter for our purposes.
6. Have each child continue until he misses ten words consecutively.
7. To secure final score: Give a credit of one point for each word correctly pronounced on the first trial. Give a credit of one-half point for each word correctly pronounced on the second trial. Total these credits and write the sum at the top in the place indicated.

Teacher's Appraisal of Pupil's Type of Attack. These tests are to be used eventually not only to measure ability to recognize and pronounce words but also to afford an opportunity to diagnose the type of difficulty which the pupil may disclose. There are four common types of methods of pronouncing words. These may be observed most readily when the pupil encounters unfamiliar, difficult or long words. By careful observation of the pupil's efforts on such words it is usually possible to detect the method of attack. The four methods are as follows:

1. The spelling method, in which the pupil spells the word letter by letter, either audibly or inaudibly; sometimes he spells the whole word through, sometimes but a part of the word.
2. The phonetic method, in which the pupil tries to translate the letters or "phonograms" into sounds. Such analyses are usually based on small sections of the word. For example, in trying to pronounce "pleasant" the pupil may sound the parts as follows: "p" "p," then "pu-el," "pu-el-ez," "pull-ez-un-tuh." This phonetic procedure should be carefully distinguished from the syllable method which is next described.
3. The syllable method, in which the pupil searches for familiar syllables or familiar word parts. For example, he may break up the word "examination" into "ex-am-in-a-tion" or into "exam-in-ation," or he may break up "firmament" into "firm-a-ment." This method may usually be distinguished from (2) in which phonetic elements like "th," "tr," "bl," etc., are more commonly the units of attack.
4. The whole word method, in which the pupil tries the word as a total. When the words are unusual or difficult, he often gives a wrong word which is like the right one in some detail. Thus, he may call "friend" such words as "fried," "from," "fresh," or even "rend." Often this is the procedure of what we think of as the "careless" reader who may call such a word as "for"—"far," "fun," "of," "or," "fur," "form," etc., or say for "them" such words as "the," "that," "then," "hen," etc. In dealing with long words, these children often show the absence of a definite, piecemeal method of attack and appear merely to guess.

With some experience it is usually possible to indicate by the way in which you record errors the type of attack that was used. Thus "f-o-r-t-u-n-e" indicates letter attack; "fo-or-t-un," etc., indicates phonetic; "for-tune" indicates syllable or word part; and "fortune" indicates the whole word method. In these cases it is assumed that all were mispronounced by errors of sounding which cannot be indicated in printing but which you can indicate by any type of diacritical marks. Reproduce the child's divisions, accents and soundings of the words as well as you can.

Age and Grade Averages. Near the academic mid-year of 1923-24, Form I and some other one form of the test were given individually to 1700 pupils of Grades 1 to 6, inclusive, in schools mainly in New York,

New Jersey, Pennsylvania, and Delaware. The results of these 3400 tests when arranged by grades and ages provide a fair standard of comparison. The average scores are given in Tables I and II.

TABLE I

AVERAGE SCORES ON PRONUNCIATION TEST FOR GRADES 1 TO 6

	GRADE					
	1	*2*	*3*	*4*	*5*	*6*
Number of Pupils	150	240	460	350	330	165
Average Score at Mid-Year	25.0	51.6	65.8	80.8	87.5	95.5

TABLE II

AVERAGE SCORES FOR CHILDREN OF AGE-RANGE INDICATED

	AGE-RANGE 5-5.9—9-9.9				
	5-5.9	*6-6.9*	*7-7.9*	*8-8.9*	*9-9.9*
Average Score	16.2	23.2	58.4	66.0	75.5
S.D. Distribution	7.4	21.0	22.0	21.3	21.1
	AGE-RANGE 10-10.9—14-14.9				
	10-10.9	*11-11.9*	*12-12.9*	*13-13.9*	*14-14.9*
Average Score	85.0	87.0	88.8	86.9	90.9
S.D. Distribution	15.2	14.8	14.7	18.8	13.7

The average scores for the grades and ages have been plotted and lines drawn to provide the best fitting curves. From the curves have been deduced the figures in Tables III and IV which are the most convenient and satisfactory grade and age standards of comparison. It will be understood, of course, that these figures are not standards or norms in the sense of ideal achievements but merely averages of attainments in a group of schools selected solely on the basis of convenience.

The Order of Difficulty in the New Forms. Study of the results obtained with the new forms shows that the change from multigraph to print type has produced no important changes in the order of difficulty of the words. A few small shifts appeared in the average results for the

final forms, no greater than those to be expected from a repetition of the use of the original tests upon another group of subjects. Individual subjects or small groups may, of course, vary considerably from agreement with an order of difficulty which holds only for an average of large numbers of pupils selected from many schools.

TABLE III

TABLE OF SMOOTHED AVERAGES FOR THE GRADES TO BE USED AS STANDARDS OF COMPARISON

Grade	*Score*	*Grade*	*Score*	*Grade*	*Score*	*Grade*	*Score*
1.4	22	2.8	57	4.2	76	5.6	90
1.6	26	3.0	60	4.4	78	5.8	92
1.8	33	3.2	63	4.6	80	6.0	93
2.0	39	3.4	66	4.8	82	6.2	94
2.2	45	3.6	69	5.0	84	6.4	95
2.4	50	3.8	72	5.2	86	6.6	96
2.6	54	4.0	74	5.4	88		

TABLE IV

TABLE OF SMOOTHED AVERAGES FOR AGES TO BE USED AS STANDARDS OF COMPARISON. AGES IN YEARS AND TENTHS

Age	*Score*	*Age*	*Score*	*Age*	*Score*	*Age*	*Score*
6.4	24	8.6	67	10.8	83	13.0	89.5
6.6	31	8.8	69	11.0	84	13.2	90
6.8	37	9.0	71	11.2	85	13.4	90.5
7.0	42	9.2	73	11.4	85.5	13.6	91
7.2	47	9.4	75	11.6	86	13.8	91.5
7.4	51	9.6	77	11.8	86.5	14.0	92
7.6	55	9.8	78	12.0	87	14.2	92.5
7.8	58	10.0	79	12.2	87.5	14.4	93
8.0	61	10.2	80	12.4	88	14.6	93.5
8.2	63	10.4	81	12.6	88.5	14.8	94
8.4	65	10.6	82	12.8	89	15.0	94.5

Equivalence of the Four Forms of the Tests. The method of selecting the words for the four forms of the test described above was such that equivalence would almost necessarily result. Of the final forms, the first was given to every subject and each of the other three to one third of the subjects. Thus each form may be compared with Form I. Samples of the results obtained from two forms given to the same group are

shown in the accompanying table. The differences between the several forms and Form I at all score levels are such as to be accounted for more adequately by chance than otherwise.

TABLE V

COMPARISONS OF AVERAGE SCORES OBTAINED WHEN THE TWO FORMS INDICATED WERE GIVEN TO THE SAME GROUP OF SUBJECTS

Form I	*Form II*	*Form I*	*Form III*	*Form I*	*Form IV*
4.9	4.2	19.8	21.4	3.9	3.4
12.3	12.6	39.2	38.4	26.4	27.1
29.5	30.0	40.5	39.5	51.1	51.9
48.4	47.8	55.6	55.6	64.2	64.7
64.2	63.5	70.2	69.9	84.5	83.6
80.3	80.8	78.7	79.2	93.3	93.2

The Influence of Practice on the Test. Even with the several forms quite equivalent in difficulty, the scores of two tests may be unequal as a result of practice in taking two such tests. To provide a check on the influence of practice, half of the subjects were given one form and half the other form first. This procedure makes it possible to compute the amount of gain in score due to the practice secured in taking two tests. The results, as shown in the accompanying table, indicate that this effect is nearly, if not quite negligible.

TABLE VI

SCORES FROM SEVERAL GROUPS FOR THE FIRST AND SECOND TRIALS IN THE TESTS, DIFFERENCES IN FORMS OF THE TEST RENDERED CONSTANT

	GROUPS						*Average*
	A	*B*	*C*	*D*	*E*	*F*	
Score in First Trial	24.0	52.9	61.4	82.5	87.1	94.6	67.09
Score in Second Trial	26.9	53.9	65.5	81.6	86.5	95.0	67.86

Reliability of a Single Test. The several forms of the test are equivalent in difficulty, but this does not mean necessarily that a given subject will find them all equally difficult. For example some will find Form II harder than Form I, others will find it easier, others about the same. The two forms are equivalent in the average only. It was found also that approximately equal average scores were obtained on a first

and second trial, but this does not mean that in all individual cases two trials will yield the same results. It is important to ascertain the extent to which scores do vary in an individual case. It is customary to disclose the reliability of a test in the form of a coefficient of correlation obtained between scores of a test given twice to a group of individuals. Since such correlations vary considerably according to the range of abilities among the pupils tested, and for other reasons, it is more meaningful to ascertain the average of the differences between two tests, one on each of two forms.

Since the words in the Pronunciation Test show a wide range of difficulty, the reliability should not be ascertained merely for the instrument as a whole but for each of several levels in it. The average differences between two tests have therefore been computed separately for those whose scores fall within each tenth of the range. The data are given in Table VII.

TABLE VII

AVERAGE AMOUNT OF DIFFERENCE BETWEEN TWO TESTS WHEN THE TOTAL SCORES ARE WITHIN THE RANGES INDICATED

Range of Scores	0–9	10–19	20–29	30–39	40–49
Difference Between Two Tests	1.9	2.4	3.2	2.9	3.0
Range of Scores	**50–59**	**60–69**	**70–79**	**80–89**	**90–99**
Difference Between Two Tests	3.2	3.1	3.3	3.0	2.8

With the exception of scores below 19, the average difference between two tests with different forms is about 3 points. This difference indicates a fairly high degree of reliability in the instruments. For most practical purposes a single test will be satisfactory. The average of two tests would yield a very close measure of the abilities measured by this instrument.

Correlations of the Test with Other Verbal Tests. The Pronunciation Test has been given to pupils of Grades 1 to 4 in the Horace Mann School along with other tests with which correlations have been computed. The tests used in Grades 3 and 4 are as follows:

1. Word Perception. Speed in visually identifying in groups of misspellings the proper form of the words shown at the left of the group.
2. Reading Short Words. Speed of reading a series of 200 words of 2 and 3 letters.
3. Spelling. List of 36 words.

4. Rate of Reading. Burgess Test, two forms.
5. Comprehension in Reading. Thorndike-McCall.
6. Word Knowledge, 50 words from Terman-Binet, arranged as a group pencil-and-paper test.
7. Auditory Learning. Association of oral words with geometrical figures.
8. Visual Learning. Association of non-sense words with geometrical figures.

The raw coefficients obtained from 86 pupils of Grades 3 and 4 are shown in Table VIII.

TABLE VIII

CORRELATIONS OF THE PRONUNCIATION TEST WITH OTHER VERBAL TESTS INDICATED

	Reading		Comprehension			
With Word Perception	Short Words	Spelling	Rate of Reading	in Reading	Auditory Learning	Visual Learning
.70	.81	.74	.60	.54	.30	.42

The correlations of the Pronunciation Test with other functions involving the perception, pronunciation, spelling, understanding and learning of words are positive and some of them are fairly high. The test gives at least a rough estimate of general verbal abilities, but it would be by no means a satisfactory substitute for other tests of rate and comprehension in reading. It serves to supplement these tests where certain particular facts are desired.

Records for fifty children in Grade 1 in several tests make possible correlations with ability in pronunciation.

The tests for which records are complete follow:

1. Oral Reading. Horace Mann material.
2. Reading Comprehension. Haggerty.
3. Spelling. List of 25 words.

The correlations with these tests are 0.84, 0.79 and 0.70 respectively. Among the beginning pupils, the Pronunciation Test is a very fair index of general reading ability.

SOME INCIDENTAL RESULTS OF THE STUDY WITH THE TEST

Differences in Achievement Among Schools. The attainments of the same grades in the several schools surveyed varied greatly in the earlier years and less markedly in the higher years. The range in average grade scores were as follows:

Grade 1	from 3.9 to 45.5
Grade 2	from 18.0 to 69.9
Grade 3	from 32.0 to 85.1
Grade 4	from 47.2 to 89.3
Grade 5	from 69.1 to 94.9
Grade 6	from 81.2 to 98.3

In some schools reading is well under way by the middle of the first year, in others, not until late in the second or early in the third grade.

Dependence of Achievement upon Use of Phonetics. In the surveys made with the final forms of the test, the examiners indicated whether some form of phonetic training had been utilized. The use of some type of phonetic training was found in over 80 per cent of the classes in Grades 1 to 4 inclusive. Omitting a few classes in the first two grades, in which little instruction of any sort in reading was given, it appears that those which received phonetic training are about equal to those which did not. The average scores were:

	Grade 1	*Grade 2*	*Grade 3*	*Grade 4*
Phonetics	27.5	50.3	67.4	75.2
No Phonetics	26.1	54.6	62.3	77.0

The differences here shown are of no significance. They should not be considered as certainly indicating an absence of value in phonetic instruction, inasmuch as the number of other variables such as the length of time given to reading, general mental ability of pupils in the several schools, etc., were uncontrolled. The data indicate merely that, in comparison with such other variables, the presence or absence of phonetic drill is not a conspicuous factor in achievement.

The Causes of Difficulty in Recognition and Pronunciation of Words. For the five lists of 110 words each, used in the preliminary survey, the following facts were available: (1) The difficulty of each word as de-

TABLE IX

	Correlations		
	Length with Difficulty	Infrequency with Difficulty	Length with Infrequency
Form 1	.95	.86	.86
Form 2	.89	.86	.79
Form 3	.84	.79	.74
Form 4	.88	.78	.80
Form 5	.945	.86	.85
Average	.901	.83	.808
P.E.	.012	.011	.025

termined by data obtained from the first four grades; (2) the length of the word, i.e., number of letters, and (3) the frequency of the usage of the word as determined by Thorndike. The 110 words in each of the five forms were arranged in order on the basis of each of these three facts and the correlations between them obtained, as shown in Table IX.

The difficulty of words is correlated closely with length. The more infrequently words are used in print the more difficult they are in general. This is indicated by the coefficient—0.83. At the same time, the longer words are the more infrequent. The relative effects of the two interlacing factors, length and infrequency, may be disclosed by partial correlations. The results of such computations are as follows:

Average Partial r (Length with Difficulty, Frequency constant)..... 0.71
Average Partial r (Infrequency with Difficulty, Length constant)..... 0.37

The first coefficient indicates that the length of the word, quite apart from the frequency with which it appears in reading, is a positive and substantial factor in determining the difficulty of recognition and pronunciation. The second correlation discloses a positive but relatively smaller influence of the frequency with which the word is used upon the difficulty of perceiving it. The frequency score here used is based not on the experiences of the pupils in question but upon the counts of the appearances of the words in English literature of various types. How closely such ratings indicate the relative frequency with which these pupils have encountered the words in their own reading is not known.

When the influences exerted by the combined effects of length and frequency of words are determined by multiple correlation, the resulting coefficient is 0.953. This correlation is high, but leaves some room for the influences of other factors. The nature of some of these factors is revealed by inspection of the words which turned out to be more difficult than would be expected on the basis of their length and infrequency alone, such as own, cigar, quiet, nation, jealous, cylinder,—words which offer several possibilities of phonic rendering and include silent letters.

Several thousand erroneous pronunciations from many pupils are now being analysed, and more intensive surveys of the errors of a small number of specially poor readers are being made. From these two studies it is hoped that the most frequent types of errors may be ascertained as well as some knowledge concerning the character of errors found in the specially poor reader, whether, for example, such a reader usually shows many of the typical errors or whether his difficulties are few and peculiar.

A REPORT ON A SPECIFIC SPELLING SITUATION

By HUGHES MEARNS

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This is the fourth in a series of reports of an investigation of a specific spelling situation each of which has been presented before the annual staff conference of the Lincoln School of Teachers College. It is an illustration of how any group of trained teachers, having tested their pupils and finding grave deficiency, may set to work, using the method of research, and effect improvement.

Tests of the spelling ability of the pupils of the Lincoln School, reported by Dr. H. O. Rugg in the staff conference, September, 1920, showed this school to be above the average of that of the country but with a spelling efficiency of less than 60 per cent. As a result of this conference a committee on spelling was named to discover the best method of improving the spelling of pupils in the school.

After a survey of the literature on the subject, which included an examination of every important study on spelling from Cornman and Rice to date, the committee recommended a use of the Horn-Ashbaugh lists with such methods as should appear workable in the given condition. The Horn-Ashbaugh lists are based solely on words found in correspondence, the chief *locus* of spelling; the 4000 words, occurring most frequently in three-quarters of a million words tabulated from all types of correspondence, have been tested adequately for difficulty-in-grade and have been distributed along the grades in fairly even groups. The point of view which the committee adopted as a result of six months' intensive study of the literature on the subject lent itself easily to a use of these lists; for they came to believe that increase in spelling efficiency would not be a result of studying words in general, or rules, or mnemonic or other devices, but the result of using a direct and persistent attack on the words that must eventually be learned.[1]

At the close of the school year (March-May, 1921), a preliminary

[1] A thoroughly satisfactory presentation of the point of view is found in *Principles of Method in Teaching Spelling as Derived from Scientific Investigation*, by Ernest Horn, State Univ. of Iowa, in the Fourth Report of the Committee on Economy of Time in Education, Part 2, Chap. III.

use was made of the lists in grades four to eight inclusive. The procedure was as follows: Each Monday the grade teacher tested the class on twenty words not previously seen, an inventory to discover the spelling problem for each pupil; these misspellings were the pupil's task for the week. The same list was tested on Wednesday and on Friday, the aim being to make sure that the misspellings were mastered, and to discover the new misspellings among words not completely learned. Four weeks later the list was given again to test retention. In an individual record sheet, containing a printed list of the words, the pupil kept an account of his failures and of his progress in mastering them.

An important element in the tests was the teacher dictation with pupil response. Before the inventory on Monday, the pupils, reading from printed lists, pronounced each word after the teacher; they heard the words pronounced again as the teacher read the word and gave the right spelling while they marked their papers; they heard the words pronounced twice and spelled correctly once on the Wednesday and on the Friday tests, and similarly in the retention review four weeks later. In addition, the pupil had to visualize the correct form each time he recorded a misspelling in his printed individual record sheet.

For his own help a printed card, *How to Learn to Spell a Word*, was placed in the hands of each pupil. This was a close adaptation of the Horn-Ashbaugh method whose main elements are: repeated visualization of the correct form, repeated vocalization of the correct form, and repeated muscular control of the right form.

The results of the nine weeks' study were reported as follows at the staff conference, September, 1921:

1. Interest is stimulated by the common sense method of having all the pupil's effort directed toward mastering his own known misspellings.

2. Improvement is marked in each stage of the study.

3. The improvement is general; the poorest spellers show decided advance.

4. Giving a spelling list once does not disclose the whole spelling deficiency; a considerable number of new misspellings, representing incomplete learning, continue to appear until the final test.

5. Printed individual record sheets are valuable in forcing attention once more upon the correct form; besides, they give instant knowledge of those who have not been studying properly, quickly isolate the peculiarities of the "poor speller," and give opportunity to study his needs.

6. The preliminary testing (inventory) showed a spelling efficiency

of 90 per cent (IV, 90; V, 90; VI, 96; VII, 89; VIII, 80) as against 55 per cent disclosed in tests by Dr. Rugg (IV, 68; V, 57; VI, 55; VII, 46; VIII, 56). The difference in these scores is due to the fact that the inventory testing was preceded by a definite teaching exercise—reading and pronouncing by teacher and pupil alternately—while Dr. Rugg's tests were given in a context dictation which even concealed the fact that spelling was being investigated. The 55 per cent, then, represents probably the real condition of spelling in these grades; the difference between this low percentage and the 90 per cent attained in the inventory is to be placed to the credit, mainly, of the element of direct teaching in the method of giving the inventory. Besides, Dr. Rugg's lists represented a somewhat higher grade of difficulty.

For the following year (1921-22), the Committee decided (1) to make two inventories of the grade lists, one immediately following the other, and in each instance to omit the teaching exercise described above —reading and pronouncing by teacher and pupil alternately—in order to discover at the start the real spelling deficiencies; (2) to center attention upon a clearing up of individual spelling errors as shown by the two inventories; (3) to organize the pupil's attack so that a misspelled word should be studied until it was right in a daily test, right in a weekly test, and right later in a retention test with no misspellings between; and (4) since no pupil's misspellings would be identical, to arrange that pupils in pairs should dictate their studied words to each other; and further (5) to extend the use of the individual record sheet to include the failure or success of each word in every stage of its mastering.

As a result during the school year, 1921-22, the Committee secured 160,000 dictated spellings; of these dictations 28,000 were recorded as misspellings and of these misspellings 22,000, omitting duplications, were recorded at least once in daily, weekly, and monthly tests. Altogether, then, about 250,000 spelling records made up the data from which that year's study was drawn.

The method of procedure was, first, to dictate the lists for the appropriate grade, about forty words a day, having each day's misspellings marked by the pupil on the individual record sheet. This record was called the first inventory. Immediately after the final dictation of the first inventory—averaging 740 words to a grade—a second inventory was made in precisely the same manner. This was done because the preliminary nine weeks' study had shown a constant cropping out of

new misspellings, evidences of incomplete learning; besides, informal reports from other sources indicated that a single dictation never discloses the true spelling situation.

After the two inventories were completed, then began the daily study of the individual misspellings, five words each day. Words misspelled in daily tests were held over for the next day's lesson of five words. Weekly tests were made of such misspellings as had been mastered in previous daily study, and words misspelled in this test were placed again on the list for daily study. Monthly tests were held of misspellings that had been right in a daily test and right in a weekly test. Failures in the monthly test were sent back for daily study. The aim was to keep at a misspelling until it should be right after immediate study, right in a weekly review, and still right one month later.

The Horn-Ashbaugh method was taught and strongly recommended, but the Committee has no reliable information as to its use by pupils. It is probably not possible to test the use of this method; it does not lend itself easily to checking. The following statement of the essential steps in the method, however, was printed conspicuously on the front cover of each individual record sheet.

HOW TO STUDY A WORD

LOOK at the word AND SAY it by syllables.
SPELL it to yourself by syllables.
LOOK TO SEE if you have it right.

WRITE the word.
LOOK AGAIN to see if you have it right.
WRITE the word THREE TIMES without once copying from yourself.

The majority of the misspellings for this year were right in each successive step, that is, after immediate daily study, at the end of a week, at the end of a month; but in some instances the records show an individual word that had taken a dozen or more trials before it passed the arbitrary test of learning which was set: right in daily, weekly and monthly tests with no misspellings between.

Below are given scores representing the spelling efficiency of each grade from the fourth to the eight, inclusive, (1) as tested by the two inventories, (2) in each stage of pupil study, and (3) as judged in a latter retention test:

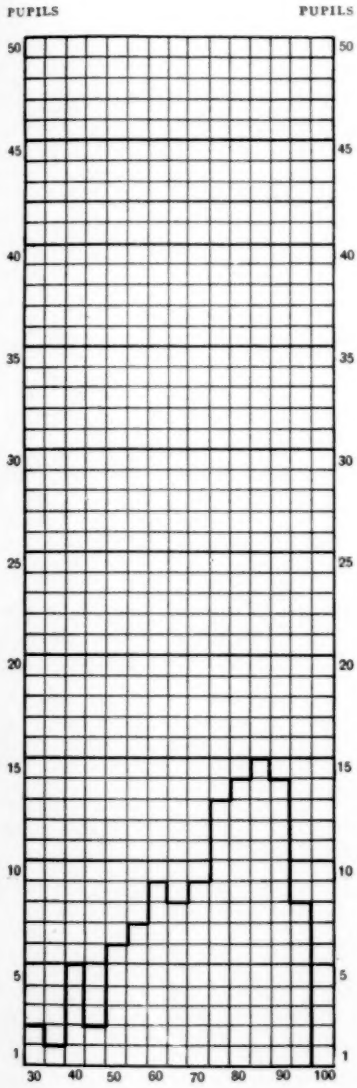
TABLE I

SPELLING EFFICIENCY, MEDIAN SCORES FOR GRADES FOUR TO EIGHT, (1) AS TESTED BY TWO INVENTORIES, (2) IN EACH STAGE OF PUPIL STUDY, AND (3) AS JUDGED IN RETENTION TEST

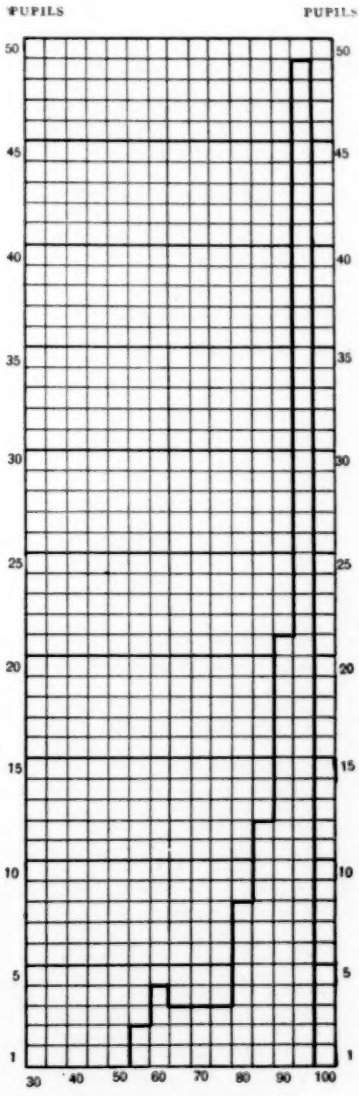
Grade	*Number of Words Tested Twice*	*Original Per Cent of Efficiency Including Total Separate Misspellings Both Inventories*	*Efficiency Percentage After*					
			First Inventory	*Second Inventory (Including New Words)*	*Second Inventory (Excluding New Words)*	*Daily Study*	*Weekly Review*	*Retention Test*
Fourth	740	62%	69%	86%	92%	92%	96%	98%
Fifth	800	73	77	87	92	94	97	98
Sixth	800	70	75	86	90	96	99	99
Seventh ...	680	80	84	92	96	99	99	100
Eighth	620	72	75	88	93	98	97	100

Aside from the high permanent results obtained—class spelling efficiency raised from original percentages of 62, 73, 70, 80, 72 to percentages of 98, 98, 99, 100, 100 in retention tests—two things stand out: (1) The constant proportion of new misspellings that crop out in the second inventory; (2) the remarkable increase in spelling efficiency disclosed in the second inventory.

1. *The New Misspellings in the Second Dictation.* In each grade five per cent of the list is spelled correctly on the first dictation and incorrectly on the second; but it is a wide distribution, from zero to twelve per cent of the whole list; and it increases directly with spelling efficiency: spellers of 95 per cent efficiency and over have none, 90 to 95 per cent spellers have 1 per cent, 85 to 90 per cent spellers show 2½ per cent, 80 to 85 per cent spellers have 3 per cent, the 70 per cent spellers and the 60 per cent spellers have 6 per cent, the 50 per cent spellers 8 per cent, while pupils with a spelling efficiency below 50 per cent average 10 per cent of the whole list dictated. Considering this factor alone,—the new misspellings that do not disclose themselves until after repeated tests,—the second inventory would seem to be a waste of time for the good spellers, although possibly important for the poor spellers in disclosing a larger percentage of their imperfectly known words. The Committee would not advise the regular classroom use of a second inventory, as it is too expensive in time and teacher effort, besides becoming inevitably boring. In the following year labor was saved by having a single



FIRST DICTATION
(740 words)



SECOND DICTATION
(740 words)

inventory, but a later review was used to test retention and, at the same time, to catch all incompletely learned words that did not show in the first dictation.

Random lists of those imperfectly known words give interesting data on the learning problems involved. The words show characteristic waverings, mainly (1) between phonetic and printed spelling (*cracker* turns to *craker, thread* to *thred, noise* to *nois, often* to *offen, watch* to *wach*); also (2) between colloquial and more formal pronunciation (*everybody* to *evrybody, parade* to *prade, seventy* to *sevety, throat* to *throad, sentence* to *setence, enlarge* to *elarge*); between the use of single and double letter (*snap* to *snapp, shell* to *shel*); (4) between the retention or omission of final mute *e* as (*brine* to *brin, brain* to *braine*); and (5) in uncertainties among our varying symbols for the same sound (*kept* slips to *cept, mouse* to *mouce, prices* to *prises, yield* to *yeild, blanks* to *blancks*), and one must include here the difficult slurred vowel (*slippery* to *slippary, formal* to *formel, barrel* to *barral, mental* to *mentel*). The point is that these words, which bear every evidence of being half-learned, make up the main stock of the new misspellings. In this list, for example, we do not find the eye-offending misspellings of the first inventory, such as *inoff* (enough), *lowre* (lower), *whife* (wife), *flose* (flows), *ocain* (ocean), *dande* (dandy), *joyend* (joined), *specer* (speaker), *bilu* (blue), *joain* (join), *eaity* (eighty). These have been largely cleared away, or they remain in the group that are misspelled in both dictations.

2. *Increase of Spelling Efficiency as a Result of a Second Inventory.* This increase is large and it is generally distributed. Every pupil in the school shows a marked rise in spelling efficiency. The fourth grade's spelling efficiency of 69 per cent, as shown in the first inventory, becomes 92 per cent at the end of the second inventory, a gain of 23 per cent. The fifth grade moved from 77 per cent to 92 per cent; the sixth grade from 75 per cent to 90 per cent; the seventh grade from 84 per cent to 96 per cent; the eighth grade from 75 per cent to 93 per cent. In other terms, out of 18,003 words misspelled in an unstudied list of dictated words, 11,445 words, or two-thirds of the total misspellings, were cleared up without conscious study in a second dictation made over a month later. Even the poor spellers move forward astonishingly: the five poorest, who show a spelling efficiency in the first test of 40 per cent, 40 per cent, 31 per cent, 37 per cent, 32 per cent, rise respectively to 56 per cent, 63 per cent, 57 per cent, 63 per cent, 87 per cent; that is, from 36 per cent efficiency to 65 per cent efficiency, a gain of 29 per cent.

There was no conscious study by the pupils; but an analysis of the

steps of the Committee's procedure discloses distinct elements of teaching concealed in what seems to be simply two tests of a long spelling list: (1) The words were pronounced by the teacher; (2) they were read again in a phrase context; (3) they were written by the pupils (an act in itself a summoning of reading and writing memories and a strengthening of bonds under the stress of a clear necessity); (4) they were pronounced again by the teacher and spelled to aid in pupil correction of papers; further (5) each pupil noted his misspellings with a cross beside the correctly printed form in his individual record sheet. Other factors, no doubt, were a general consciousness of the seriousness of misspelling, an interest in the plan to make good spellers out of poor ones, but, primarily, the recognition of the right form through the stimulation of the discovery of error.

There seems to be operating here something in the nature of a flash of understanding that fused past right experience and present right experience into a permanent possession; which means, perhaps, that learning is not always a laborious and timeable procession of steps to the accompaniment of the snapping of undesirable bonds and the slow reiterated welding of new ones; learning may be as swift and meaningful as conversion.

In a study of random lists of the 11,000 out of the 18,000 misspellings which seemed to have corrected themselves without conscious effort, this change from incorrect to correct by a simple flash of understanding, does not appear so improbable, for the majority of these words were held back from the correct form by the merest shell of phonetic spelling or colloquial pronunciation. The dictation of a list, the consequent respelling, the act of watching for error on another's paper, and the transferring of one's own record, may fix such words sufficiently in the conventional form to last. Here are illustrations of these two prevailing types; (1) from phonetic to conventional, *paer* to *pair, mudy* to *muddy, docter* to *doctor, inoff* to *enough, manuel* to *manual, caff* to *calf, lether* to *leather, fansy* to *fancy, retale* to *retail, tiket* to *ticket, stashon* to *station, frunt* to *front, steemer* to *steamer, taip* to *tape, enyone* to *anyone, libirty* to *liberty, therd* to *third, erth* to *earth, ot* to *ought;* (2) from colloquial to formal pronunciation, *strager* to *stranger, ispect* to *inspect, dearst* to *dearest, afterwould* to *afterward, rallroad* to *railroad.*

A movement at least toward the correct form is shown in words that remain incorrect in both inventories: *gellie* to *jellie, doler* to *doller, frend* to *freand, waga* to *wagan, mache* to *maitch, braslet* to *blaclet, wemen* to *womon, oster* to *oister.*

Until we know something further about the cause of our results it would seem that, without any formal study, a remarkable general increase in spelling efficiency is obtained by simply directing attention to error.

The following year (1922-23), the Committee took advantage of the first year's experience to simplify the whole machinery of dictation, correction and recording; it eliminated the second inventory, for reasons previously explained, and, to increase interest, gave the first inventory in short lists followed by a study of misspellings; there was a review at the end of each four weeks, a dictation by the teacher of the whole list thus far studied. By those means, there was no necessity for the scheme of pupils dictating in pairs.

Below are given scores representing the spelling efficiency of the elementary grades (4-6), at the beginning and at the end of the two years, 1921-22, 1922-23. As the junior high school schedule did not permit the same daily attack on spelling, the scores of the seventh and eighth grades are not included.

TABLE II

SPELLING EFFICIENCY, MEDIAN SCORES FOR GRADES FOUR TO SIX AT BEGINNING AND END OF TWO YEARS

Grade	*Efficiency Percentage*			
	At Beginning of Previous Year	*Retention Test on Previous Year's Words*	*At Beginning of 1922-23*	*Retention Test at End of 1922-23*
Fourth	—	—	83%	88%
Fifth	70%	98%	88	93
Sixth	73	98	88	98

The improvement is even more significant: the wide distribution disappears; there are no "poor spellers."

The work of the Spelling Committee has not been carried on sufficiently long, nor with enough pupils, to warrant sure conclusions for the guidance of other classroom teachers, but its data would seem to indicate that lasting spelling efficiency may be obtained in a useful vocabulary by the method indicated in this report, the main steps of which are: (1) selection of tested socially-useful lists arranged in the order of grade difficulty; (2) dictation of small portions of the list at a time as an inventory test; (3) pupil check on errors from teacher's oral

spelling; (4) pupil recording of individual errors; (5) pupil study of words misspelled only; (6) teacher dictation to test retention, followed again by steps 3, 4, and 5 (pupil check on errors from teacher's oral spelling, pupil recording of individual errors, pupil study of words misspelled only).

Scores are given below of the thirty-nine pupils for whom we have continuous spelling data covering the two years, 1921-22, 1922-23, and for those for whom we have records for the third year, 1923-24.

TABLE III

SPELLING EFFICIENCY, MEDIAN SCORES FOR TWO GROUPS OF PUPILS FOR THREE YEARS

Year	*Inventory Test*	*Review of Studied Words*	*Retention Test, End of Year*	*Retention Test, Beginning of Following Year*
First	73%	98%	98%	98%
Second	88	93	98	98
Third	88	98	98	92

FOOD IN THE HOUSE REFRIGERATOR *

A STUDY IN BACTERIAL CHANGES IN RELATION TO TEMPERATURE AND HUMIDITY

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This paper is the outgrowth of an effort to determine more definitely the actual conditions prevailing in ordinary house refrigerators. In the experimental work described, special consideration was given (1) to the range and constancy of the main factors, temperature and humidity, in three different types of refrigerators (indicated below as A, B, and C), and (2) to the related variations in the bacterial content of foods under known temperature and humidity conditions.

REFRIGERATOR CONSTRUCTION

Two of the refrigerators were the ordinary zinc-lined house refrigerators. "A" was a five-foot box, connected with the brine refrigerating system operating in the college dormitory, and had a large brine coil traversing the upper compartment which comprised about one-fourth of the total air space of the box. The second of these metal-lined boxes, B, was ice-cooled; the ice chamber of this eight-foot box occupied a little more than the upper third of the box, and was filled through a door opening in the top. The third box, C, lacked the continuous air space, or lining, between the outer wood and inner metal walls used in the other two refrigerators. Its single wall was made of a very porous wood (weighing about nine pounds to the cubic foot, and therefore very resistant to the passage of heat). Both the outer and inner surfaces were coated with an artificial stone or cement which was painted white and

* This article first appeared in the September, 1924, issue of *The Nation's Health*, and is here reprinted through the courtesy of the editors of that journal.

enameled. This five-foot box was ice-cooled, the ice chamber occupying nearly one-third of the total space. The door of the ice chamber opened in the front. B, therefore, was the only refrigerator which did not lose a considerable amount of its coldest air when the ice (or brine coil) chamber door was opened.

With regard to the actual circulation of the contained air—the rate and completeness of circulation—there were more striking differences in the three refrigerators.

In A and B, the shelves throughout were made of strips of metal with gaps of more than one inch between the strips. These gaps allowed circulation of air, but the downward movement of the cooled air was slowed or delayed by other construction details. In A, the shelf-bottom of the coil chamber itself was not slatted but solid, except for a central space about seven inches square which had slats like the rest of the shelves. In B, the ice compartment was *entirely* separated from the shelves below, except for a slit barely two inches wide which ran across the front of the box. This meant that the air in the food chamber had still less direct contact with the ice than it had with the icy-coated brine-coil in the first icebox.

In C, constant and complete circulation was insured by the following details of construction: (1) A coarse wire basket mesh, standing out one inch from the walls, lined the entire ice chamber, including the door, making a continuous air space between the ice and the box. The shelves were made of this same one-inch basket mesh. (2) The ice chamber was not completely separated from the food chamber, for an insulated baffle open at top and bottom allowed and encouraged a constant circulation of the air, down around the ice up through the opposite side and down over the ice again. The inside angles were rounded throughout to facilitate cleaning, which factor also aided in turning the air currents and securing complete circulation.

TEMPERATURE, RANGE AND CONSTANCY

Temperature determinations were made by frequent readings with ordinary laboratory thermometers, with maximum-and-minimum thermometers, and with electrical resistance thermometers. The laboratory thermometers were first checked against each other by readings made simultaneously as the surrounding liquid changed gradually from melting ice to boiling. The electrical resistance thermometer readings were all corrected by preliminary comparisons made with a U. S. Bureau of Standards mercury thermometer. Readings were made at least three

times a day, except for the maximum-and-minimum thermometers, which were read daily.

A wide temperature range was found in A, the brine-coil refrigerator, from 26° to 62° F., or a range of 36°. When this icebox was operated properly, a deep coating of ice crystals was present on the coils, and the brine coil compartment gave low averages, 30° to 32°, or 34°, occasionally rising to 40° or even 42° F. The maximum-and-minimum thermometers showed, however, that even in this coil chamber the temperatures sometimes rose to 53° F. at night, owing to carelessness at the central plant. Irregularities of this kind made any continued experiments involving both temperature and humidity impossible, and after several weeks of wasted effort we were, therefore, forced to discontinue work with this brine-cooled box.

This, of course, was not so much a criticism of this type of refrigerator as of the central management at that time, for the objectionably high temperatures mentioned obtained for very short periods only, and are not *necessarily* present in brine-cooled refrigerators. Where such difficulties do occur, they may, of course, be minimized by having a cold brine reservoir in the coil chamber—a device now quite generally recognized as valuable for just such irregularities in temperature. In our box the almost solid construction of the shelf forming the bottom of the coil chamber delayed unnecessarily the circulation of the cooling air. Where proper care is provided, the brine-cooled refrigerator gives on the coldest shelf very desirable (low) temperatures for such foods as milk, averaging around freezing and even below.

B gave on the whole a narrower but a higher range: from 46° to 65° F., a range of but 19° and lying above 46° F., or 10° higher than A. Here, also, the coolest shelf was the top shelf, lying just below the ice chamber, and itself had a range from 46° to 55° F. The warmest (bottom) shelf ranged from 55° to 65° F. Knowing that B was the poorest refrigerator from the point of temperature, we had hoped to use it for combined high temperature and high humidity conditions, but it proved impossible (as described later) to standardize its humidity relations, and after about five weeks of continued effort we were obliged to admit that it was impossible to get accurate and constant humidity ratings for this box, and we had to discontinue work with it.

In C, constructed not merely to allow but to insure constant and complete circulation of the contained air, the temperature of the box ranged from 36° on the coldest (lowest shelf) to (rarely) 64° F., on the warmest shelf. When kept well filled with ice the warmest shelf did not

rise above 50° to 52° F., even when the outside room temperatures rose to 82° F. This might, therefore, fairly be called a range of 16°, lying above 36°. While the lowest temperatures in C were not so low as the lowest obtainable in A, the brine-cooled box, they were much lower than those obtained in B, the other type of ice-cooled refrigerator.

C differed, too, in that the temperatures were much more stable or uniform for a given level or shelf. During a two-week test, when kept well stocked with ice, the daily averages for the three shelves kept within quite a narrow range, despite variations in outside room temperatures from 68° to 82° F. The daily averages for the coldest (lowest) shelf ranged from 39.7° to 42.6° F.; the middle shelf, from 47.4° to 48.3° F., and the warmest (top) shelf from 50.8° to 52.9° F.

RELATIVE HUMIDITY

The relative humidity of the air in the various refrigerators was tested by using known concentrations of sulphuric acid [2] and determining from the variations in weight the amount of water a given dilution absorbed from the air, or the amount of its own water such a dilution gave up to the surrounding air.

From these weight variations was calculated by the aid of specially prepared tables [3] (specific gravity, temperature and vapor tension relations) the relative humidity in the air space in which the acid was exposed.

In such determinations we used for each exposure two different concentrations or dilutions of acid—both near the vapor tension of the air to be tested: one dilution strong enough to absorb water from the surrounding air, and one, slightly weaker, which would lose water to the air.

This part of the work proved unexpectedly difficult. The close and constantly changing ratio between temperature and humidity (warmer air can "hold" more water than cold air, etc.) makes it practically impossible to use such a delicate method with such small quantities of air, unless the temperatures are quite steady and constant.

Each time a pair of appropriate dilutions of acid was prepared on the basis of preliminary exposures for twenty-four or forty-eight or even seventy-two hours in either A or B, the results of the final exposure would show the dilutions entirely unsuited to the temperature-humidity

[2] Hendrickson, N. and Swan, C. C.: Method of determining relative humidity in cold storage rooms. Used in Bulletin 775, U. S. Department of Agriculture; not yet published. A description to be obtained by addressing either chairman of this group.
Stevens: "Humidity Relations," *Journal of Phytopathology*, Vol. VI, 1916, p. 430.

[3] See table by the Biochemic Division of the Bureau of Animal Industry. Reprinted in Circular 149 (Hastings, A cold-storage evaporimeter), September, 1909. This circular includes a discussion of temperature and vapor tension relations.

situation then prevailing. In A the main cause was, no doubt, the erratic temperatures due to irregularities in the central plant, giving even on the coldest shelf a range of 27° in temperature and approximately a range of 40 or 50 per cent in relative humidity, from 80 to 100 per cent when ice crystals were present to probably less than 40 per cent when the higher temperature prevailed.

The relative humidity was apparently greater throughout B than in either of the other boxes. (Paper bags and papers left on the shelves became more limp or moist than in A and B.) But for B as well as for A it also proved impossible to secure satisfactory humidity readings by the sulphuric acid method. Since the temperature range was steadier in B than in A, it was thought the air exchange due to the opening of the doors might be responsible for the great variations in humidity. The doors were, therefore, sealed (gummed paper strips) for varying periods (3 to 7 days) to aid in selecting the proper strengths for the dilutions to be used in the final tests. Even so, no better results were obtained, and each time the final test indicated that the dilutions thus selected were most unexpectedly without the proper range for the relative humidity during the final test period. We were, therefore, compelled to explain the failure as due in part, doubtless, to irregularities in temperature, but mainly to the poor air circulation, the slow and incomplete air movement interfering with constancy in relative humidity. This conclusion was supported by the fact that, as shown later, the relative humidities varied least in C, where all the air was in constant circulation.

With C much more definite and satisfactory results were secured. As stated earlier, the temperatures themselves were much more stable or constant for any given level in this box. In C, as the air around the ice becomes cooled, it passes down around and through the ice chamber, becoming not only colder thereby, but, due to the chilling, of a higher relative humidity, and so starts its circulation around the icebox at its maximum relative humidity. With sufficient ice to give prolonged contact of air and ice, a fairly constant initial temperature and humidity are possible. Since, as the temperature gradually increases the relative humidity gradually decreases, the various shelves in this refrigerator tended to be quite constant not only in temperature but in relative humidity. In other words, with complete circulation—no dead air spaces even in the ice chamber—both the moisture and heat content of the air are constantly and evenly modified by contact with the ice, and the relative humidity as well as the temperature is stabilized.

We were able to procure quite stable humidity readings for the vari-

ous shelves in this box (Table I). Paired bottles of diluted acid, standardized by calculations based on earlier exposures on the shelves on which they were to be used, were exposed simultaneously on each of the three shelves in this icebox. For the first time we found the expected changes in our two dilutions: the stronger dilution had absorbed water (Column 3 in Table I) and the weaker dilution had lost water. Repetitions of this process gave for the warmest top shelf an average humidity of 29.9 per cent, for the middle shelf 44.1 per cent, and for the coldest bottom shelf an average of 66.5 per cent relative humidity.

TABLE I

CORRELATED TEMPERATURES AND HUMIDITIES IN REFRIGERATOR C

Average Temperature (April 28, 1923)	*Original Acid Strength*	*Corrected Acid Strength*	*Relative Humidity*	*Mean Relative Humidity*
Warmest Shelf: 55.8° F....	High: 68.6	65.29	11.27%	20.83%
	Low: 52.92	53.51	30.38%	
Middle Shelf: 53.5° F.....	High: 52.92	52.50	32.13%	40.49%
	Low: 42.4	44.07	48.86%	
Coldest Shelf: 42.5° F.....	High: 42.4	41.2	54.8%	61.4%
	Low: 33.8	34.5	68.0%	

The lowest humidities were not so high as we had at first expected. "Complete air circulation with ice contact," however, does not necessarily mean for that air a *higher* water content. Since ice contact chills the air it tends to remove water from the circulating refrigerator air rather than increase the amount present in it. Complete circulation may mean a lower *relative* humidity, for it is the amount of water left in the chilled air after contact with the ice that limits the relative humidities in each of the warmer parts of the refrigerator.

Complete and constant circulation does mean, however, as shown before, that the humidity relations are everywhere more constant. In this box the entire absence of drip or condensed moisture and the drier condition of paper (bags, newspapers) left on the shelves indicated that the air was actually drier than in the second icebox.

Other workers have demonstrated that bacterial multiplication is affected by variations in humidity, the maximum rates being obtained at the higher relative humidities,[4] 75 per cent humidity or higher. While such

[4] Kopeloff, N. and Morse, S., in *Journal of Laboratory and Clinical Medicine*, Vol. VII, June, 1922.

favorable humidities may occur in stagnant corners or dead air spaces in poorly constructed iceboxes, these high optimum humidities for micro-organisms were not reached in C.

With solid foods, humidities below 50 per cent may be decidedly deterrent factors in bacterial growth; with liquids, it is a question whether or not atmospheric humidity plays so important a part. However, this investigation has demonstrated that in well-constructed iceboxes, the humidities which most nearly approach favorable growth conditions are found only at the lower temperatures, temperatures which are themselves less favorable for bacterial multiplication (Table II). The possible stimulation or aid rendered by the higher relative humidities is, therefore, more or less neutralized by the unfavorable temperature conditions which accompany them. The variations in bacterial multiplication

TABLE II

SELECTIONS FROM PREVIOUS INVESTIGATIONS SHOWING BACTERIAL MULTIPLICATION AT VARIOUS TEMPERATURES WITHIN THE RANGE OF ORDINARY HOUSE REFRIGERATORS

	Fahrenheit	*Bacterial Count After*	
		1 Day	*3 Days*
Colon Bacteria in Sterile Milk *	60° F. or over	29,800	354,000
	55°	115	4,500
	30°	120	195
Proteus Bacteria in Sterile Milk *	60° F. or over	5,800	401,000
	55°	430	74,000
	30°	122	1,010
Milk Containing Chance Organisms †	60°	180,000	Innumerable
	55°	18,800	Innumerable
	50°	11,600	Innumerable
	42°	2,600	500,000
	39°	2,500	218,000
Milk Containing Chance Organisms	60°	900,000	Innumerable
	55°	187,000	Innumerable
	50°	89,000	Innumerable
	42	43,000	5,760,000
	39°	38,000	4,300,000

* Reed, H. S. and Reynolds, R. R., Virginia Agricultural Exp. Station, Technical Bulletin, No. 10, 1916.
† Parks, *Pathogenic Bacteria and Protozoa.*

rates reported in the following part of this paper are, therefore, directly due to temperature variations, the results of which were all more or less minimized by the attendant humidity conditions.

These temperature and humidity studies were begun in March and continued through May. Partial repetitions of this work were made in July, and again between the following December and April. The temperature and humidity averages given in Table I probably represent the ranges that might be expected in the future of any well constructed refrigerators for ordinary household use when kept well filled with ice. The room in which C was kept was a large, well ventilated room, but it contained incubators, Arnold sterilizers, and autoclaves which were in constant use. In kitchens perhaps a slight increase in refrigerator temperatures might be expected, but with care (keeping ice-chamber full, closing refrigerator door promptly) it should be possible to keep the average for the coldest shelf of the refrigerator down to 45° F. The following section will indicate how necessary it is to keep the temperatures as low as possible.

BACTERIAL INCREASE

The direct relationship of temperature to growth is well established, many workers having contributed convincing figures in connection with such foods as milk, showing the direct effects of temperature. Selected figures suitable for the ranges in which we are interested have been grouped in Table II.

Wishing to connect temperature effects more definitely with the home care of foods, we studied quite a varied range of common foods, comparing the bacterial growth or increase in about forty different combinations of foods and microörganisms.

In Table III the bacterial counts are given as multiples or ratios of the original count. With milk having an initial count of 90,200 bacteria, the rough ratios 180, 60 and 3 tell us more regarding the effect of various temperatures than the actual final bacterial counts, of 163,064,000, 54,620,400 and 2,720,400 could do. Besides, in the various foods studied there was a wide variation in the initial counts, some having hundreds of bacteria per cubic centimeter while others had millions; and in such cases there is a strong tendency on the part of the reader to compare the final totals rather than the rates of increase.

We first compared the growth increase in various known cultures in broth or milk to gain an idea of the changes a given organism might produce under household refrigerator conditions.

TABLE III

RESULTS OBTAINED WITH VARIOUS ORGANISMS IN ONE TO SIX DAYS AT VARIOUS REFRIGERATOR TEMPERATURES. INCREASE IS GIVEN IN RATIOS OR MULTIPLES OF ORIGINAL COUNTS

Organisms and Substances	*Original Count per c.c.*		*Temperature Range*	*Rate of Increase in 24-48 Hours*		*Rate of Increase in 72-86 Hours*		*Rate of Increase in 120-144 Hours*	
	Direct	Plate	Fahr.	Direct	Plate	Direct	Plate	Direct	Plate
Yeast in Meat Extract Broth	1,200,000	1,200,000	57-69.8	X9	X107	X27.5	X351	X25	X9
			43-57	5.5	102	5	63	16.5	
			30-42	3.5	10.5	4.5	17	1.5	
Yeast in Meat Extract Broth	2,500,000	2,000,000	60-61	2	8.5	3	10	8.5	
			40-58	1.5	3.5	1	2	2	
			30-40	0.5	1.5	1	2	1	
Yeast in Meat Extract Broth	18,000,000	12,500,000	60-62	1	2	11	9	13	
			42-59	1.5	2	10	1.5	6.5	
			30-40	0.5	1	4	1	3	
Sarcina	288,000,000	6,000	.....	1	6.5	1	6	2	
			.....	5	3	1	9	1	
			26-43	0.005	1	0.5	16	5	
Colon Bacterium in Meat Extract Broth	33,000,000	18,000,000	55-62	2	3.5	10	4.5	2	
			.....	...	...	...	...	...	
			29-43	1	0.5	2	0.5	1	
Colon Bacterium in Meat Extract Broth	4,900,000	230,000,000	55-64	30.5	144	...	...	6.9	
			.....	...	...	...	...	...	
			32-44	0.5	0.5	...	...	14	
Colon Bacterium in Meat Extract Broth	155,000,000	230,000,000	60-65	...	...	...	...	12	
			.....	...	...	...	...	...	
			38-45	...	...	...	...	0.5	
Enteriditis	5,800,000	6,800,000	57-64	24	8	...	...	49	
			51-55	8	8	...	...	...	
			41.5-45	2	2	...	...	7	
Proteus in Meat Extract Broth	.....	.....	53-64	3	7	...	...	46.5	
			51-55	2	2	...	...	...	
			41.5-45	1.5	0.5	...	...	6	
Proteus and Yeast in Sterilized Milk	2,400,000	1,800,000	51-57	28	20	...	...	...	
			49-55	17	32	...	...	...	
			40-45	3	10	...	...	...	
Enteriditis and Coli in Sterilized Milk	2,880,000	12,000,000	as above	0.5	0.5	...	...	...	
				0.5	0.1	...	...	...	
				0.5	0.1	...	...	...	
Proteus and Yeast in Broth	16,200,000	18,000,000	as above	123	99	...	...	...	
				44	19	...	...	...	
				8	3	...	...	...	
Enteriditis and Coli in Broth	29,400,000	18,600,000	as above	20	5.5	...	...	...	
				17	4	...	...	...	
				5	2	...	...	...	
Enteriditis in Pasteurized Milk *	6,740,000	5,920,000	59-64	...	...	...	...	61	
			.....	...	...	...	...	...	
			33-46	...	...	...	...	5	
Proteus in Pasteurized Milk *	7,896,000	7,346,000	as above	...	...	...	...	64	
				...	...	...	...	...	
				...	...	...	...	3	
Coli in Pasteurized Milk *	.....	.....	.....	...	...	...	...	...	
			.....	...	...	...	...	...	
			39-48	...	...	...	...	...	

* Counts given are total counts, and cover increase in original organisms as well as the added organisms

In the next series of foods we endeavored to include widely varying materials: inert or bland substances which ordinarily spoil quickly (asparagus soup), foods often eaten without further cooking (milk), and materials that are often made up in quantities for use throughout a relatively long period (meat stocks, aspics). This last group of substances was included as such longer periods are often necessary if the housewife wishes to reduce the labor of preparation to a minimum and yet provide variety in menus, allowing therefore one or more days to elapse before serving a left-over food (e.g., gelatin).

These results are given in Table IV and show a striking ratio of increase in the chance organisms present in various foods, especially at the higher temperatures. This is much more noticeable than with the known organisms in Table III. In some cases even the highest icebox temperature is below the optimum for such organisms as *Bacterium coli;* another cause of lower ratios of increase in Table II may be the interference of growth due to an organism's own wastes. With mixed organisms such products may neutralize each other somewhat. The establishment of a serial flora as conditions change may also account for the higher figures in Table IV. The main factor, however, with such chance mixed organisms is the probable presence and proportion of organisms which can grow rapidly at temperatures afforded by the domestic refrigerator.

In Table IV as in Table I, we do not find any definite parallel between direct and plate count. This can be explained, in part at least, by great differences in the character of the substances used. The direct counts were made by using the same "fixed" platinum loops, standardized by repeated checking against known dilutions plated on agar. In the initial counts on the whole, the direct counts are higher than the plate counts, as is ordinarily expected.[5] The disparity, however, is less in more sensitive organisms (e.g., *Bacterium coli,* Table II), and is not therefore explainable on the basis of unfavorable temperatures or media (meat extract agar used for plating). In the later counts, the plate counts are in the main markedly higher than the direct counts. Just why, it is difficult to explain. All direct counts were made from duplicate slides, standardized loopfuls being placed on a two-square-centimeter area, an average of twenty fields being counted with the sliding stage. All plate counts are the averages of duplicate plates from each of three or more dilutions. In many cases the plating was doubly duplicated, two different workers plating duplicate series. The same loops

[5] Wilson, G. S., in *Journal of Bacteriology,* Vol. VII, 1922, p. 405.

TABLE IV

BACTERIAL INCREASE OBTAINED IN VARIOUS FOODSTUFFS AT REFRIGERATOR TEMPERATURES. AS IN TABLE III, THE RESULTS ARE STATED IN RATIOS OR MULTIPLES OF THE ORIGINAL COUNTS

Substances	*Original Count per c.c.*		*Temperature Range*	*Rate of Increase in 24-48 Hours*		*Rate of Increase in 72-86 Hours*		*Rate of Increase in 120-144 Hours*	
			Fahrenheit	Direct	Plate	Direct	Plate	Direct	Plate
Pasteurized Milk....	285,000	55,250	60-65	...	...	X1,900	X192	X2,138	X12,900
				...	...				
			38-46	...	...	3.5	3	1,965	11,120
Beef Broth	2,400,000	600,000	50-57	X41	X798	Innum-	2,450	....	....
(Cookery)			49-55	31	256	erable	2,500		
(Stocks)			40-44	13	54	92	580		
Veal Broth	1,800,000	160,000	as above	9	3,000	43	375	....	....
			as above	8	1,001	38	237		
			as above	6	262	25	1,500		
Pea Soup	10,800,000	312,000	as above	386	5,000	Innum-	2,500	....	....
			as above	188	1,200	erable	600		
			as above	25	200	130	450		
Chicken Broth	6,750,000	3,000	as above	1.5	...	136	24,000	....	....
			as above	1	...	34	2,500		
			as above	1	...	5	360		
Asparagus Cream Soup	8,600,000	640,000	as above	1.5	...	Innum-	700	....	....
			as above	1	...	erable	36		
			as above	...	...	"	35		
Asparagus Cream Soup	1,228,000	1,080,000	48-56	6.5	127	15	63	....	....
			44-51	3.5	85	13	52		
			39.5-44.5	1	54	1.5	45		
Chicken Soup	2,500,000	300	48.1-57.2	7.5	18	36	1,400	....	....
			42.8-46.4	5	25	20	1,070		
			39.2-41.7	4	3	12	50		
Veal Soup	8,900,000	.....	as above	10	1.5	58	1,410	....	....
			as above	1	1	15	1,420		
			as above	.5	1	10	168		
Pea Soup	8,400,000	2,500	as above	1	2	25	9,140	....	....
			as above	.5	2	17	15		
			as above	.1	.5	3	9		
Raspberry Jello	740,000	1,800	47.7-56.1	6.5	304	17	90	....	....
			44.4-50.6	4.5	270	14	70		
			39.5-44.6	2.5	65	9	58		
Lemon Jello	610,000	1,500	as above	11	132	34	66	....	....
			as above	5	170	20	63		
			as above	3	65	18	63		
Plum Gelatin	990,000	800	47.7-56.2	3	70	13	460	....	....
			44.4-50.6	3	60	10	83		
			39.5-44.6	2	50	.5	21		
Tomato Aspic	1,480,000	750	as above	5	3,600	11	2,053	....	....
			as above	3	2,320	6	1,823		
			as above	1	460	5	1,473		
Tomato Juice (Canned)	.....	10	.....	...	...	...	...	....	....
			.....	...	...	...	...	....	....
			40-49	...	.5	...	.1	....	3,000
Meat Broth	19,000	2,000	60-65	1,836	5,418	...	...	3,300	2,000,000
			.....	...	...	...	...	....	....
			38-47	.5	.01	...	...	1,170	43,000
Meat (Surface Layer)	2,648,000	1,300,000	50-60	1.5	130	.5	110	23	.1
			48-58	1	109	.5	42	18	.5
			40-45	1	.5	.5	1	8	.00

* Counts given are total counts, and cover increase in original organisms as well as coli.

TABLE V

COMPARISON OF BACTERIAL CHANGES AS INDICATED BY TASTE AND NUMERICAL INCREASE

Substance	*Original Bacteria Count Direct*	*Time*	*Standards*	*Temperature*		
		Days		*A. Warmest Shelf*	*B. Middle Shelf*	*C. Coldest Shelf*
1. Pea Soup	312,000	5	Taste	Very sour (3)* Bad odor (2)	Sour (2) Not so bad as A (3)	Sour (4) Musty odor (1)
			Rate of Increase	× 2500	× 600	× 450
2. Asparagus Soup	640,000	5	Taste	Passable (3) Slightly sour (3)	Good (4) Fair (2)	Good (4) Salty (2)
			Rate of Increase	× 700	× 36	× 35
3. Raspberry Jello	1,800	5	Taste	Good (5)	Good (5)	Good (5)
			Rate of Increase	× 90	× 70	× 58
4. Lemon Gelatin..	1,500	7	Taste	Good (3) More acid (1)	Good (3) Not so acid (1)	Good (3) Not so acid (1)
			Rate of Increase	× 132	× 170	× 65
5. Chicken Soup...	300	5	Taste	Good (3) Palatable (3)	Good (3) Palatable (3)	Good (4) Palatable (2)
			Rate of Increase	× 1400	× 1070	× 50
6. Veal Soup.....	900	5	Taste	Palatable (5)	Palatable (5)	Palatable (5)
			Rate of Increase	× 1410	× 1420	× 168
7. Pea Soup.....	2,500	5	Taste	Fair (6)	Not so good as A (3) Fair (3)	Not so good as B (2) Palatable (4)
			Rate of Increase	× 9140	× 15	× 9
8. Veal Broth.....	160,000	5	Taste	Rancid (1) Moldy taste (1) Bad odor (1)	Better than A (1) Moldy (1) Will pass (1)	Not so good as A (1) Moldy (1) Palatable (1)
			Rate of Increase	×375	× 237	× 1500

*The numbers in parenthesis indicate the number of voters.

were used for making the direct counts and the plate dilutions, all loop platings being checked up at intervals by a series of pipette dilutions. (Pipettes were not used throughout because of the thickness of the substances—Jello, soup stock). With such substances, relatively large masses were diluted with sterile water, thoroughly shaken and appropriate quantities used to make plates, from which the content per cubic centimeter could be estimated.

Part of the difference in plate and direct counts is doubtless connected with the difference in consistency and the presence of oil globules, shreds, fibers or starchy masses of the foodstuffs interfering with the count. Bacteria may have adhered to these in increasingly greater proportions as multiplication occurred. In such cases a minimum proportion of the bacteria would therefore be in contact with the slide and adhere to it, showing up on the direct count; while in making agar plate determinations they might all wash off in the diluting water and be distributed through it and have a chance of showing up in the agar plate counts. This explanation is more in keeping with the findings in Table IV than any other which presents itself.

In five or six foodstuffs the original bacterial content was so low that to get counts at all by the methods used, it was found necessary to allow the prepared food to stand exposed to the air for several hours; in a few instances a little tap water was added, since that might be present in such home prepared food (hastily rinsed out dishes). The aim was to parallel household procedures of the ordinary cook, not to keep the food sterile; such initial additions of bacteria found necessary in some of the foods cooked for a long time (stocks, thick soups) do not interfere, therefore, with the validity of this study of bacterial multiplication.

In our homes, taste, smell and appearance all aid in deciding the quality and the usability of food, and we discard milk that develops a bitter taste, soup stock that becomes rancid, and gelatin that becomes clouded and watery. How nearly bacterial increase parallels food spoilage undoubtedly varies with each type of food and with the varieties and chemical activities of the bacteria developing in it. Nevertheless, it seemed worth while to see if any relationship could be demonstrated during the work under way. With several of the foods, therefore, two additional lines of work were carried on. With each bacterial examination there were also made (1) careful comparisons of taste and odor and (2) laboratory tests for acidity changes, etc.

Samples of food kept at each of the three main temperature ranges were given non-identifying labels and then "judged" by students in foods

and cookery at the time samples were taken for bacterial counts. Ratings were made independently by several different tasters; these were given as single judgments on each food as "good," "fair," "poor," and as comparisons, "better than the other two" and "the poorest of the three."

As seen from Table V, the results of refrigeration for about four days (or slightly less) correspond fairly well with the rate of bacterial increase. Since the taste depends not only upon the rate but upon the ***kind*** of organisms, an occasional lack of correspondence, as in No. 1 or No. 8, is no more than might be expected.

The gelatin and jello compounds were tested for difference in viscosity. It so happened that all of these substances showed little visible change in solidity; and as might therefore be expected, practically no change in viscosity was demonstrable. Water dilutions of the substances which had been four to five days on the warmest shelf, and which had a bacterial count 60, 90 and 460 times the original count passed through the test single drop funnel in barely 1 per cent less time than the original substance had done—a difference quite within the range of probable error, and therefore not included in detail in this report.

Tests for changes in acidity were made at intervals on foods kept at the three refrigerator temperatures. Pure cultures, as would be expected, showed the increase or decrease in acidity characteristic of the respective organism (Nos. 7-9 in Table VI). With mixed organisms, such as might by chance gain entrance to a given foodstuff, final acid and alkali changes might be expected to be more erratic and unpredictable, varying with the acid and alkali-forming power of the various competing organisms, the relative ease with which the supplied food is utilized by them and their temperature demands.

It will be therefore no surprise to find that there was not a greater correspondence between the rate of general bacterial multiplication and the H-ion or acidity readings. Many of the H-ion determinations for acidity were duplicated by an outside laboratory and as the plating was also done in duplicate or triplicate, the lack of correspondence must be a real one. Note in No. 3 the lack of change in the H-ion readings after two days in spite of big difference in bacterial content; or note in No. 6 how little difference in acidity there is at the different temperatures; if 460 times the original content caused a change from 4.6 to 5.3 in acidity, why did not 3,600 times the original content give a greater difference in acidity?

Measurable chemical changes and by-products apparently lag far behind bacterial multiplication ratings or else mask each other. Unless

organisms produce some marked objectionable change (musty odor, sourness), the bacteria may become innumerable before a given foodstuff will be rejected as unfit for food.

TABLE VI

ACIDITY CHANGES COMPARED WITH NUMBER INCREASE

	Initial Activity (H-Ion)	*Changes in 2-3 Days H-Ion*	*Bacterial Count*	*Changes in 4-5 Days H-Ion*	*Bacterial Count*
1. Chicken Soup	6.2	6.1	X20	6.1	X1,400
		6.1	25	6.1	1,070
		6.1	5	6.1	50
2. Veal Soup	6.3	6.2	X60	6.2	X1,416
		6.2	15	6.2	1,420
		6.2	10	6.2	165
3. Pea Soup	6.4	6.4	X25	5.6	X9,140
		6.4	15	5.6	15
		6.4	5	5.6	9
4. Raspberry Jello	4.2	3.4	X300	...	...
		3.4	270	...	...
		3.4	65	...	...
5. Plum Gelatin	2.9	4.6	X70	...	...
		4.5	60	...	...
		4.6	50	...	...
6. Tomato Aspic	4.6	5.3	X3,600	...	...
		5.3	2,320	...	...
		5.3	460	...	...
7. Dextrose Broth Containing Coli	7.2	5.4	X1.5	5.1	X5
		5.6	.5	5.3	1.5
		5.9	.1	5.5	1
8. Plain Broth Containing Subtilus	7.0	6.8	20	6.8	20 } Spores
		6.8	2	6.8	2 } only
		6.8	..	6.8	.. } in all.
9. Milk Containing Subtilus...	6.2	6.4	12	6.5	12
		6.4	2	6.8	2
		6.3	..	6.5	..

A second glance at Tables III and IV will call attention to the large difference there may be in bacterial numbers in such products at the ex-

tremes of temperature afforded by the common house refrigerators, and will emphasize the necessity of keeping on the coldest shelf, or below 45° F., milk and semi-liquid foods which are to be eaten without further cooking, especially milk. The possibility of objectionable but less obvious or less easily measured bacterial by-products makes age alone a good reason for discarding stale refrigerator food.

CONCLUSIONS

1. In house refrigerators with constant air circulation, fairly constant temperatures and relative humidities may be obtained.

2. Continuous circulation of the refrigerator air is essential to secure throughout the lowest temperatures and the lowest relative humidities of which a given refrigerator is capable.

3. The temperatures obtained in many house refrigerators are distinctly favorable to the multiplication of bacteria and other microorganisms.

4. Bacterial multiplication varies directly with refrigerator temperatures rather than with relative humidities, the depression due to low relative humidities being more than overbalanced by attendant high temperatures.

RECOMMENDATIONS FOR HOUSEWIFE

1. House refrigerators should be constructed to insure constant and complete air circulation. No dead spaces or air pockets should be allowed.

2. The ice chamber should be large and kept well-stocked; the larger the ice surface the more contact there is with the circulating air, and the greater the effect upon the air.

3. Thermometers should be supplied for the warmest and coldest shelves at least. Milk should be kept at temperatures below 45° F. Temperatures of 60° or more mean that the ice box is acting as an incubator rather than a refrigerator.

4. Since cold air is relatively heavier than warm air, careless management of the doors may allow much of the cooled air to fall out of the box. Watch the thermometer to verify this.

5. Milk and similar foods should be kept as cool as possible, and used as fresh as possible. The warmer the shelf and the longer the stay in the refrigerator, the greater the bacterial content and deterioration of the food. Such bacterial changes are not without danger to the consumers, especially to babies using stale milk.

NEW STUDIES IN EDUCATION

SOME VALUES DERIVED FROM EXTENSIVE READING OF GENERAL SCIENCE

More or less extensive reading of extra-text materials has for some time been an accepted practice in connection with courses in high school English, and to perhaps a less extent in the courses in the social sciences and some of the other secondary school subjects. With the rapidly increasing numbers of books suitable for children and adolescents, written authoritatively, edited with care, and beautifully bound and illustrated, and with the constantly improving facilities available even in the more remote schools for obtaining these books for use, the time has arrived when actual values to be derived from extensive reading in connection with the various high school courses should be scientifically determined according to some of the most approved methods of modern educational research.

This the author of *Some Values Derived from Extensive Reading of General Science* * has done with respect to general science. He has divided the problem into three phases which represent typical conditions in representative American high schools with respect to the work in general science: "What values may be secured from extensive reading of general science (1) when given as an extra course outside of the regularly scheduled program of studies; (2) when substituted for part of the usual, required work in general science; (3) when given in addition to all the regularly required work in the course in general science?"

The report of the study as a whole consists of four chapters and an extensive appendix.

The first chapter takes up some important considerations preliminary to the actual experimentation itself. A study is first made of the current practices with respect to extensive reading in general science in eighty-four selected American high schools. The results of this study reveal that while a large majority of the teachers of general science favor the practice of extensive reading in connection with their work and employ it

* Curtis, Francis Day, *Some Values Derived from Extensive Reading of General Science.* Teachers College Contributions to Education, No. 163.

to some extent, reading of extra-text science, extensive in the sense used in this study, is employed in practically none of the schools.

The remainder of Chapter I is devoted to the search for some basic criteria to govern the selection of reading materials for the experiment in extensive reading in general science, the need for which is established by the results of the preliminary study. The criteria considered are:

1. The contributions of the materials to the background needed for an intelligent reading of science in the public press;

2. Their identity with or close relation to the pupils' scientific interests, together with their probable satisfaction of the scientific interests of adults;

3. Their probable contribution to the development of scientific attitudes.

In connection with the first of these criteria the author makes three analyses of more than three thousand articles found in consecutive issues of a considerable number of representative newspapers; the elaborate technique developed for analyzing newspaper science according to its function, its method of treatment, and its content is described in detail for teachers of high school science who may wish to use it in training their pupils for an intelligent and discriminating reading of newspaper science. All the scientific terms appearing in over six hundred miscellaneous newspaper articles upon scientific subjects are included along with an analysis of their relative importances as indicated from a comparison with Thorndike's "ten thousand words."

In connection with the second of the above criteria, several detailed analyses are made of the scientific interests revealed by more than six thousand questions submitted by seven hundred boys and girls and as many adults. Complete lists of these scientific interests are given in the Appendix of the study with their frequency of appearance in the various question lists.

In connection with the third criterion for the selection of materials for extensive reading, their probable contributions to the acquirement of scientific attitudes, a study was made of philosophical scientific literature from which statements of scientific attitudes were gleaned. This list of scientific attitudes was then submitted to teachers of science in universities, colleges, and high schools. The reactions of these experts, along with the list of scientific attitudes revised in accordance with their authoritative opinions, are given in full.

Following each study in this chapter are the numerical findings pre-

sented in a series of tables, and a list of conclusions deduced from the findings.

Chapter II is devoted to a description of the actual experimentation to determine the results of extensive reading in general science in accordance with the conditions of the problem as stated in the beginning of Chapter I. Using the criteria previously determined, the author selects from about three hundred fifty titles included in various lists recommended for use with courses in general science, a library of ninety books. Selections from these are placed in the hands of several classes in general science and the results secured from their reading are determined by a variety of means in a series of controlled experiments. Achievement and general scientific information are tested with standardized tests; expansion of reading interests, increase in liking for science and other benefits which the pupils and their parents considered the boys and girls had derived from the experiment, and the frank opinions of the pupils regarding the various books on the selected list which they had read, are obtained from the replies to a series of questionaries. The possession of scientific attitudes is measured by a "Test of Scientific Attitudes" which the author has invented and which is given complete in the chapter.

Chapter III is devoted to the presentation of the results from the various separate experiments; tables are given showing the statistical treatment of the numerical data and each study is followed also by a discussion of the qualitative findings and a list of conclusions.

At the end of Chapter III is given in full the list of selected books used for the experiments in extensive reading along with the pupil evaluations of the various titles.

Chapter IV is devoted solely to the list of major conclusions and to recommendations to teachers of general science based upon the findings of the entire problem presented.

The Appendix contains the lists of scientific terms found in the newspaper analyses and the lists of scientific interests found in the study of scientific interests. A selected bibliography completes the Appendix.

This dissertation, upon a topic of great pedagogical importance, presents in clear and easily understandable form a large amount of material which should prove of interest and value not only to all teachers of science, both in university and high school, but also to makers of textbooks and tests in general science.

THE PHYSICAL EFFICIENCY OF TEACHERS

What evidence is there in support of statements frequently made that teaching a large number of pupils causes illness or even "breakdown" among teachers?

Is the hazard of teaching in an elementary school greater than that of teaching in high school?

Has the marital state of a teacher any bearing on or relation to the quality of health maintained?

Does the type of community bear any relation to the number of days of sick leave required during the year?

Do printed rules of boards of education allowing larger amounts of paid sick leave cause a greater number of days absence?

Does the manner of enforcing the board rules have any bearing on the extent to which teachers tend to use up the total number of days of sick leave which are allowed without question?

Answers to these questions are found in an analytic study of factors affecting the health and physical efficiency of public school teachers recently made by Dr. George E. Carrothers.* The school records in three cities were used in obtaining data. Such factors as ages of teachers, years of education, sex, salary, marital relation, number of pupils taught, amount of extra teaching, efficiency rating, type of school, condition of building, grade or subject taught, number of days of absence were considered. Records were secured for nearly 11,000 years of teaching service in Cleveland, Ohio, 800 for Springfield, Mass., and a large number for teachers from Denver, Colo.

Among the most important findings of the study are the following:

1. Such teaching factors as size of classes, type of school, condition of building, teaching in foreign or in congested sections of a city, age, experience, salary, years of education, and others which have ordinarily been associated with physical strain (trauma), bear no significant relation to the number of days of sick leave taken each year.

2. Women in the teaching profession use about two and a half times as many days of sick leave during the year as men. This disparity between women and men in teaching is several times greater than between women and men in business and other vocations.

* Carrothers, G. E., *The Physical Efficiency of Teachers.* Teachers College Contributions to Education, No. 155.

3. Dysmenorrhea is of much less significance than it is usually considered to be.

4. Married women have a greater number of days of illness than single women, entirely aside from the period of childbirth.

5. Single men have a greater number of days of recorded sickness than married men where no check is maintained on the causes of absence.

6. Teachers in the younger age groups (in Cleveland) have a greater number of recorded days of illness than teachers in the older age groups.

7. Among married women (in Cleveland) the records show a greater amount of illness on Monday after two days of vacation than on Friday after a week of teaching.

8. There appears to be 38 per cent more illness (in Cleveland) on Monday than on Friday for the youngest group of men, and 37 per cent more illness on Friday than on Monday for the oldest group of men.

9. A rather close relation exists between the manner of enforcing board rules and the number of days of sick leave taken by certain groups of city teachers.

These findings lead to the following recommendations:

1. That every applicant for a teaching position be given a thorough physical examination. That this examination be followed by instructions in how to keep well.

2. That applicants be grouped into four classes: (*a*) Those physically well and strong who may be considered available for almost any sort of assignment. (*b*) Those with minor defects which for the most part can be remedied by personal attention. Assignment to be carefully considered until defects are corrected. (*c*) Those with defects of a more serious nature, yet remediable. Only certain types of work are to be open to members of this group. (*d*) Those who for very definite reasons are not fitted to engage in teaching. This does not mean that there are not other vocations in which they can render very effective service.

3. That a probationary health period of one year be established.

4. That every student entering a normal training school or college of education be given a thorough physical examination, by a competent physician who has a "health positive" attitude toward life. That the

examination be supplemented by instruction and training in personal health and hygiene.

5. That all teachers absent more than ten days in any one year on account of illness be given a re-examination and instructions in how to keep well.

6. That school physicians and nurses be made available for service to teachers, as physicians and nurses are provided in mercantile and industrial institutions.

7. That boards of education through their administrative officers control the health and absence situation among teachers.

8. That provision be made for insuring a reasonable income to teachers during their total annual days of illness.

COLLEGE NEWS

EDUCATIONAL ADMINISTRATION

The Administration Club began the year with a big picnic. More than two hundred students, together with their wives and children, were entertained on the grounds of the Horace Mann School on Saturday, October 4. The members of the staff responsible for the courses for superintendents of schools were hosts. During the afternoon baseball games rivaling the World Series, track and field events more or less like the Olympic games engaged the attention of the group. The picnic supper at 4:30 was followed by the half hour of community singing which has become traditional in the Administration Club.

Professor Fletcher Harper Swift, of the University of Minnesota, has joined the staff responsible for courses for superintendents of schools and will participate in these courses during the present year. Students of administration are familiar with Professor Swift's contribution in the field of educational finance. He will share responsibility with other members of the group not only in the courses given but in guiding the work of research students.

Professor Paul R. Mort, with the cooperation of Professor J. R. McGaughy, Professor Strayer, and Professor Haig of the School of Business, has prepared a report on State Aid for Public Schools in the State of New York for the Special Joint Committee on Taxation and Retrenchment of the New York State Legislature. This study is based in considerable measure upon Professor Mort's study, *The Measurement of Educational Need,* and upon results which were made available by the Educational Finance Inquiry in the study by Professors Strayer and Haig, *The Financing of Education in the State of New York.*

On the opening day of the University a group of graduate students accompanied by Professor N. L. Engelhardt and Dr. Carter Alexander began the field work of the Watertown, N. Y., survey. Another group of students under the direction of Professor Strayer spent the week of October 5 in Watertown. Other members of the staff are coöperating in a complete survey of this school system. Other departments of the College will contribute through special investigations — in secondary education under the direction of Professor Franklin W. Johnson, and in elementary education under the direction of Professor M. B. Hillegas and Professor Annie E. Moore.

Professor Strayer has just arranged for a study of the financing of public education in the city of White Plains. This inquiry, together with the Watertown survey, will furnish a number of opportunities for students in the Second Major Course for Superintendents of Schools who are required not merely to assemble data, but to define the problems to be investigated, and to plan the inquiries to be undertaken subject to review by members of the staff.

During the vacation period, between Summer Session and the opening of the University this fall, Professors Strayer and Engelhardt made a study of the need of elementary school accommodations in the city of Montclair. They have rendered a report to the board of education which is at present being considered by that body.

Professor McGaughy spent the last

week of August speaking before teachers' institutes in three counties of Ohio. Two days of the week were spent at Springfield, one in Troy, and two days in Dayton. His lectures dealt principally with problems of school finance and the use of educational and psychological tests.

Mr. R. R. Ritchie, formerly at Okmulgee, Okla., and Mr. A. K. Loomis, formerly superintendent of schools at Hiawatha, Kan., have been appointed assistants in the Division of Field Studies, Institute of Educational Research. They will be engaged during the current year on a study of the school seating problem under Professor Strayer's direction. A fund has been contributed for this investigation by the American Seating Company, and a report will be issued at the end of the current academic year.

The report of the Providence, R. I., survey has just come from the press. Application for copies should be made to The Oxford Press, corner of Public and Temple Streets, Providence, R. I.

Professor Strayer spoke before the Conference on Supervision held at the University of Iowa on Thursday, October 2. His subjects were "The Participation of Teachers in Administration" and "The Financing of Public Education."

Professor Engelhardt spent September 18 in Harrisburg advising with the Board of Education with respect to the building program which they have had under consideration for some time. More than a year ago he coöperated with Dr. Finegan and Mr. Perkins in a study of the situation which resulted in the recommendation that two high schools be constructed. It appears that the Board of Education and the civic organizations of Harrisburg are agreed upon the wisdom of carrying out this recommendation.

Miss Evelyn M. Horton, who was statistician for the Educational Finance Inquiry, has been appointed statistician in the Division of Field Studies, Institute of Educational Research. She will coöperate on field studies made by this division of the Institute, the field work of which will be done as in former years largely by the students registered in the courses for superintendents of schools.

Nine volumes of the report of The Educational Finance Inquiry have been published. The other four dealing with The Financing of Education in California, Iowa, and Illinois, and a report on Unit Costs in Higher Education will come from the press in the very near future.

ADVISERS OF WOMEN AND GIRLS

The Advisers' Club of the Summer Session of 1924 was a thriving organization of some one hundred and fifty members, which under the leadership of its executive committee held five interesting and profitable meetings. Among the speakers who addressed the club were Dr. Juliana Haskell, adviser to graduate women of Columbia University; Mrs. Etsu I. Sugimoto, instructor in Japanese in Columbia University as well as contributor to *Asia;* Judge Jean Norris, of the New York Court of family relations. A social "get-to-gether," and a demonstration of correct dancing and practical games for large groups contributed to the success of the summer's program. The officers of the club were: President, Miss Maude Schaeffer, dean of women, State Teachers College, Fresno, Cal.; vice-president, Miss Elizabeth M. Hause, adviser of girls, West Chester High School, Pa.; recording secretary, Mrs. Burgess Van Vechten, Junior High School, Topeka, Kan.; corresponding secretary, Mrs. Louise B. More, dean of women, Hamlin College, St. Paul, Minn.; treasurer, Miss Ethel Parmenter, East Technical High School, Cleveland, Ohio; program committee, Miss Mary Bollert, dean of women, University of British Columbia, Canada, and Miss Anna L. Rose, dean of women, George Washington University, Washington, D. C.; social committee, Mrs. Florence Stemple, dean of women, West Virginia Wesleyan, and Miss Julia Lee

Hawkins, dean of women, Oklahoma State College for Women, Chikasha, Okla.

As a member of The Committee of Fifteen appointed to study the secondary schools of California, Professor Sarah M. Sturtevant made the report on "The Status of Extra-Curricular Activities in California." That report, which attempts to analyze the problem of extra-curricular activities and the relation of the adviser of girls to them, is now available in reprint form.

The Course for Advisers of Women and Girls has been expanded into a major course carrying six points of credit per term's work for those who are sufficiently interested in that field to give it major emphasis in their program of studies. For those whose chief interest is some other field of activity, there is a new two point course which stresses some of the principal problems in the education of women and girls.

COURSES FOR ELEMENTARY SCHOOL PRINCIPALS

Remarkable progress has been made recently by the leaders among the elementary school principals of the country in perfecting a national organization and taking steps to make the work of principal more truly a profession. This has helped to create a demand for adequate professional training for the principal. To meet this demand Teachers College is offering for the first time a full complement of courses planned especially for those interested in this field.

Besides increased emphasis upon topics relating to the organization and management of an elementary school in the major course in elementary education, a two-point course in this subject is offered both during the week and on Saturday morning during the present semester. In the Spring Session corresponding courses will be offered in supervision and the improvement of teaching. In addition, provision is made for research and for seminar work leading to the Ph.D. degree.

The chief responsibility for the conduct of these courses and for advising with students interested in graduate work in this field has been entrusted to Professor James F. Hosic, who retains the direction of extramural instruction.

ELEMENTARY EDUCATION

During a portion of the month of June Professor Lois C. Mossman taught in the Summer Session of the Normal School at Asheville, N. C.

Professor Milo B. Hillegas addressed the city teachers of Wilkes-Barre, Pa., on September 4 and 5.

Miss Emma B. Grant, who for the past two years has been an instructor in the Jamaica Training School for Teachers at Jamaica, Long Island, has accepted a position as part-time assistant in elementary education at Teachers College.

Professor William A. McCall has been elected vice-president of the New York Society for the Experimental Study of Education. He will give considerable attention this year to developing cooperative experimental work under the auspices of Teachers College, the New York Society and the schools of the city. He has also been appointed adviser on mental and educational tests to the Chinese National Association for the Advancement of Education.

During this year, Miss Lelah Mae Crabbs will give half of her time to Teachers College as lecturer in elementary education, and half to the Child Health Association of America as associate in health education in the field of pre-school and primary education. Immediately after the close of the Teachers College Summer Session, Miss Crabbs joined the staff of lecturers at the Southwest Texas Institute, where she gave a series of ten lectures on educational measurement.

HISTORY

Miss Frances Morehouse, of the University of Minnesota, is visiting lecturer in history for the academic year.

Miss Morehouse is well known to teachers of history and social studies. She is the author of a textbook in civics for the last year of the high school and has prepared for the second Committee of Eight, syllabi on American industries and American history.

During the last week of August, Professor J. Montgomery Gambrill delivered a series of ten lectures before the city teachers of Williamsport, Pa.

HISTORY OF EDUCATION

Professor Edwin H. Reisner gave a course in the History and Philosophy of Education at the Southern Methodist University of Dallas, Tex., during June. He also gave lectures at Eastern State Teachers College, Ada, Okla., and in Texas at the Eastern Central State Teachers College, Commerce; Simmons College, Abilene, and the University of Texas, Austin.

The Research Course in the History of Education in the United States, formerly given by Professor Paul Monroe, is being offered this year by Professor Reisner.

HOUSEHOLD ECONOMICS

Among the lecturers in household economics during the Summer Session were Professor James Ford, of Harvard University, director of Better Homes in America, Inc., who spoke before a large evening audience in the Horace Mann Auditorium on "The Better Homes Movement," and Mrs. Elmer Wood, Ph.D., who gave two lectures on housing betterment. Other visiting speakers were Miss Isabel Ely Lord, author of *Getting Your Money's Worth*, who spoke on "Investment for Women," and Dr. E. L. Kirkpatrick, of the U. S. Department of Agriculture, who described the studies on the cost of living in rural districts which are now being made in several states.

Professor Benjamin R. Andrews organized a round table discussion on "Research in Economic and Social Problems Related to the Home," at the Buffalo convention of the American Home Economics Association this summer, as a result of which a permanent committee on social and economic research has been organized.

Professor Andrews has given addresses this fall before the Indiana State Teachers Association, Indianapolis, October 16; South Bend public schools, October 17; West Tennessee State Teachers Association, October 30 and 31.

The Lippincott Company is issuing this fall, under the editorship of Professor Andrews, *Food Facts for Every Day*, a textbook for upper grades and junior high school, by Miss Florence Winchell, formerly of the Lincoln School, now director of the home economics department at the New York State Teachers College. The book is based on a curriculum experiment carried out first at the Lincoln School.

The Lippincott Company will also publish this fall a reprint of *Woman's Share in Social Culture*, by Mrs. Anna Garlin Spencer, lecturer in social science at Teachers College and author of *The Family and Its Members*. This book was first published in 1911, and there is a continued demand for it as the best available statement of woman's relations to the modern economic and social situation. Mrs. Spencer is adding a new section, which will deal with developments in relation to these problems during the last decade.

HOUSEHOLD MANAGEMENT

Professor Katherine A. Fisher, who has been on the staff for the past seven years, has resigned to accept the post of director of Good Housekeeping Institute, New York City. Miss Harriet Jones, an assistant for two years in household management, has also become a member of the Institute staff as expert tester of devices and methods.

Mrs. Mary de Garmo Bryan has been appointed associate in institution management. Mrs. Bryan has recently been editor of the *Journal of Home Economics*, and has served for two years as president of the American Dietetics As-

sociation. Besides university positions, she has made a distinct contribution through her special diet studies and surveys of the Presbyterian Hospital. Mrs. Bryan will have the coöperation of Miss Alice Zabriskie, M.A., Teachers College, who has had wide experience in institution work, directing the large group work in Northfield dormitories and food departments, and for the past two years has been dean of women at Meredith College, Raleigh, S. C.

Professor Emma Gunther has been appointed by Dean Russell as the representative of Teachers College for the American Association of University Women, "to serve as a special medium of relationship and communication between this Association and Teachers College, its alumni and its undergraduates." Miss Gunther was one of the speakers at the Pennsylvania State meeting of the Association held October 18th at the College Club in Philadelphia.

KINDERGARTEN-FIRST GRADE EDUCATION

Professor Patty S. Hill, who is on leave of absence until February, 1925, is now in London. She spent the summer in France and Spain and will spend the winter months in Italy.

During the absence of Professor Hill, Miss Mary Reed is acting head of the kindergarten staff. Mrs. Ethel B. Waring has been appointed instructor in kindergarten-first grade education.

Miss Ethel Robinson has returned to Porto Rico and Miss Cornelia Goldsmith, who has been teaching in San Diego, is now in charge of the kindergarten in the Thompson building.

Miss Marjorie Wise, who was an instructor in kindergarten-first grade education last year, has returned to England. Before leaving New York she prepared a book on manuscript writing entitled *The Technique of Manuscript Writing*, which is published by Scribners' in the Series on Childhood Education, edited by Professor Hill. The course in manuscript writing, formerly given by Miss Wise, will be given by Miss Edith Conard in the Spring Session.

The latest publication in the Series on Childhood Education is *The Beginnings of Art in the Public School* by Margaret Mathias. Miss Mathias is supervisor of art in the kindergarten-elementary grades of the Cleveland Heights schools and has been an instructor at Teachers College during several Summer Sessions.

At the meeting of the State Teachers Association of New Jersey, which will take place at Atlantic City in November, the kindergarten staff will be represented by Dr. Bess V. Cunningham. Dr. Cunningham will speak on "The Use of Psychological Methods in Determining Kindergarten Values."

As lectures given under the auspices of the Home Study Department of Columbia University and broadcasted by station WEAF have proved so successful, a series of lectures for mothers is being broadcasted this fall. The first lecture in this series was given on Wednesday, October 15, at about 11:35 a.m. by Mrs. Robert J. Leonard. This lecture is being followed on succeeding Wednesdays by nine lectures on "How Mothers May Keep in Touch with Children's Interests," given by instructors in kindergarten—first-grade education and by Miss Caroline E. Stackpole, instructor in biology. It has been arranged that mothers and others who are interested in these lectures may secure a syllabus of the course from the Home Study Department of Columbia University. This syllabus gives an outline of the lectures, some practical suggestions for mothers, and a list of suggested readings. The lectures are to be financed by the sale of the syllabus, which will cost one dollar. As this is such a new departure along the line of education for mothers, much interest will be felt in the response to the lectures.

PHILOSOPHY OF EDUCATION

Professor William H. Kilpatrick presided at a conference of educators called

in Bennington, Vt., August 29-30, to advise upon a college for girls which it is proposed to found there along the newer educational lines. Members of the staffs of Vassar, Wellesley, Smith, Russell Sage, and other colleges were present.

Mr. Robert Bruce Raup, who was appointed instructor in the philosophy of education last May, gave courses at the summer session of the University of Michigan. On August 23 Mr. Raup was married to Miss Clara Eliot, an instructor in economics at Barnard College.

A new course on the Teaching of the Philosophy of Education is offered for the first time this year by Professor Kilpatrick and Mr. Raup. It is in a sense the major professional course for those specializing in the philosophy of education and is designed to give practical assistance to those who intend to teach either along the general line of the philosophy or of the principles of education. In view of the offering of this new course Professor Kilpatrick is not giving the Foundations of Method course during the winter and spring sessions. It will be given instead by Mr. Raup. For the summer session, however, it will be given by Professor Kilpatrick.

NURSING AND HEALTH

A large and interesting group of students enrolled in courses in nursing and health in the Summer Session. A total of 267 were distributed as follows: Public Health Nursing, 129; Teaching in Schools of Nursing, 85; Administration and Supervision, 53.

Professor Isabel M. Stewart contributed to the programs of the National League of Nursing Education and the American Nurses' Association, meeting conjointly in Detroit, and later gave an address at the meeting of the Canadian Nurses' Association in Hamilton, Ontario. Miss Elizabeth C. Burgess, Miss Maude B. Muse, and Miss Mary B. Hulsizer attended these conventions as delegates of the College.

A recent extension of the work of nursing and health comes in the developing of opportunities for training in field work in rural nursing. This is to be carried on by Miss Jane Allen, director of the Community Health Association in Dutchess County, and also lecturer in rural nursing in Teachers College. Scholarships of three hundred dollars are available for a limited number of qualified students.

Professor Lillian Hudson has returned from her half-year leave of absence, during which she spent a month in Russia looking into the Public Health Nursing Service there, and in the facilities for the education of nurses which is carried on as a function of the state. She had a very interesting and illuminating experience, and suffered no discomforts or restrictions of any kind.

Miss Linette Parker's text-book on *Materia Medica* is being translated into Chinese for the benefit of the students in the Schools of Nursing in China.

Mrs. Ethel Parsons, director of the Nursing Service, National Department of Health, Brazil, is here on vacation, and speaks enthusiastically and convincingly of the progress made in Public Health Nursing in Brazil. As is commonly the case, this development depends upon the creation of a system of education for nurses, and the establishment of a school of nursing on modern lines, with a staff of American nurses; and a steadily enlarging group of Brazilian women as students is Mrs. Parsons' contribution to education in this field in Brazil.

The Fund of the Adelaide Nutting Historical Collection has received contributions both from the students of the regular year and from those of the Summer Session. Among the most precious treasures of this collection are interesting autographed letters of Florence Nightingale, and a delightful little addition to these was sent from Paris recently by Dr. David Eugene Smith. Another important addition is a bound volume of a periodical containing three valuable articles of Miss Nightingale's on "Health in India" which sound as

fresh as if written today! Other interesting articles in this volume are on John Lawrence, the great Governor of India, who did so much to improve health there, and Dr. Ed. Parkes, the eminent sanitarian of half a century ago.

Miss Jane C. Allen, lecturer in rural nursing at Teachers College and also director of the Dutchess County Health Association has recently been appointed consultant nurse for the Sheppard Towner Service in Dutchess County, under the Bureau of Maternity, Infancy and Child Hygiene of the New York State Health Department.

The first award of the Isabel Hampton Robb Fellowship, of $650 annually, recently established in this department, goes to Lisle Freligh, who began work this autumn for the Ph.D. degree.

HORACE MANN SCHOOL

Among the new teachers on the staff of the Horace Mann School for the coming year are: Mr. Gerald Reynolds, high school music; Mr. Gerald Craig, elementary school science; Miss Edith M. Penney, high school English; Miss Gail Trowbridge, fine arts; Mlle. Juliet Carnus, instructor in French; Mme. Suzanne Rottach, instructor in French; Miss Rowena McGowan, fourth grade; Miss Ruth Griffith, second grade; Miss Helen Trask, intermediate assistant; Miss Bertha Pederson, primary grade assistant; Miss Cornelia Goldsmith, kindergarten assistant.

Miss Mary G. Peabody and Miss Willian Beaumont have returned to their work after a year's leave of absence.

LINCOLN SCHOOL

Recent publications of the members of the staff of the Lincoln School include *The Teaching of Junior High School Mathematics*, John R. Clark; "School Tests of Hearing," J. G. Kuderna, in *Journal of Educational Psychology* for March; "Making a Play City," Katharine L. Keelor, in *Progressive Educational Quarterly* for July; *From the Angle of Case Studies in Woodworking*, Fred Strickler; *A Study of Intelligence Test Elements*, Leona Vincent; "The History Inquiry," in *Historical Outlook* for June, "Organizing Social Studies," in *Educational Review* for June and September, Edgar Dawson; *A Book of Practice Exercises in Map Location*, H. O. Rugg, John A. Hockett, and Emma Schweppe. Dr. Rugg has prepared *A Syllabus of the Psychology of the Elementary Grades*, besides printing revised editions of six Social Science Pamphlets, *Town and City Life in America, Resources, Industries and Cities* (Parts I and II), *Explorers and Settlers Westward Bound, Mechanical Conquest of America*.

Summer teaching distributed the staff as follows: Teachers College, Columbia University, Otis W. Caldwell, John R. Clark, Laura Zirbes, Daniel C. Knowlton, H. O. Rugg, Vera Sanford, A. D. Whitman, Charles W. Finley; Hyannis State Normal School, J. G. Kuderna; Horace Mann Demonstration School, Katherine L. Keelor, Holland R. Sperry, Mary E. Barry; University of Nevada, Martha P. Porter; Cornell University, Louise E. Courtois; Pennsylvania State College, Caroline B. Zachry, A. L. Cru; University of Colorado, E. L. Vincent; Grand Rapids Playgrounds, Martha Groggel; Valley Ranch staff, Yellowstone National Park, Eleanor H. Galt; Shelter Harbor, C. M. Kinney; University of Georgia, Emma Schweppe; camp director, Colba Gucker, Thomas J. Francis; Hampton Institute, Matthew H. Willing.

Before the annual staff conference, reports were presented of investigations completed, or on the way toward completion, on Intelligence Testing and Age Rank in School Subjects, Cecile C. Swales; Spelling, Hughes Mearns; Status of the Reading Investigation, Laura Zirbes; Criteria for Ranking American Cities, John A. Hockett and H. O. Rugg; Mechanics of English Composition, Matthew Willing; History, Edgar Dawson.

New members of the Lincoln School staff are: L. F. Alfau, Spanish; Thomas Barrow, assistant in history; Mary E. Barry, sixth grade; Louise Courtois, French; Albert Cru, modern foreign languages; Eleanor Galt, physical education; Ethel Gorham, assistant in household arts; W. C. Gorham, biology, part-time; Henry Grigsby, assistant, recreation clubs; Martha Groggle, assistant in industrial arts; Martha Kelly, fourth grade; Florence E. Matthews, second grade; Winona Perry, associate in research; Martha Peck Porter, second grade; R. J. Slay, assistant in science; Fred Strickler, industrial arts; Leona E. Vincent, assistant educational psychologist; Beth Wellman, assistant educational psychologist; and D. W. Willard, associate in research.

STUDENT ORGANIZATIONS

The officers of the Students Executive Council for 1924-1925 are as follows:

President: L. B. Sharp; Vice-president: Marjorie Smith; Secretary: Harlan Metcalf; President, Graduate Club: Gordon G. Singleton; President, Class of 1925: Helen Warren; President, Class of 1926: Anne Kellner; President, Whittier Hall Student Government: Virginia Slade.

Members-at-Large: Graduate, Bertha Pullen; Graduate, B. R. Showalter; Undergraduate, Dorothy Wright, Class of 1926.

Executive Secretary: Edith E. Swan.

Faculty Representatives: Miss Lucetta Daniell, welfare director; Miss Julia Gethman, secretary of Religious Organizations; Dr. B. R. Andrews, associate professor of household economics.

The student organizations recognized by the Council this year are: Class of 1925, Class of 1926, Advisers' Club, Athletic Association, Chinese Educational Club, Educational Administration Club, Elementary Education Club, Fine Arts Club, Graduate Club, Home Economics Club, Jewish Forum, Lower Primary Club, Music and Speech Club, Newman Club, Nurses Club, Physical Education Association, Psychology Club, Rural Club, Secondary Education Club, Student Volunteer Movement, Teacher Training League, Whittier Hall Student Government Association, Y. M. C. A., and Y. W. C. A.

The social rooms for Student Organizations are located in Dodge Hall, Rooms 102, 103, and 104, the rooms formerly occupied by the Practical Arts Library. Every Friday afternoon the Student Dances are held in Rooms 102 and 103. Room 104 is a lounging room.

The Central Office Treasury has provided club treasurers with a safe and convenient depository for the small sums collected by them, a feature not possible through the regular banking channels. Last year the office handled $15,413.72 in deposits and $13,968.80 in disbursements, leaving a balance of $1,444.92 to start the year 1924-25.

The Weekly Bulletin

Last year *The Weekly Bulletin* was published in twenty-seven issues, 38,300 copies being distributed. It grew from a two-page leaflet to an eight-page paper, giving a calendar of events for each week, announcements and reports of club activities, official notices from the registrar and secretary of the College, and pictures of members of the faculty. The first number of *The Bulletin* for this year was issued on October 6. It was largely an informational number, giving a group picture of the Council members, a copy of the constitution, and a brief report of the activities of the various student organizations.

There have been so many requests for copies of *The Weekly Bulletin* that a subscription rate of 75 cents for the entire year of thirty numbers has been made by the Council. Former students of Teachers College and others who wish to subscribe are invited to do so. Make your check payable to Students Executive Council, Teachers College.

ALUMNI ACTIVITIES

THE TEACHERS COLLEGE ALUMNI ASSOCIATION

OFFICERS

President: Dr. GEORGE H. REAVIS, Dean, School of Education, University of Pittsburgh, Pittsburgh, Pa.

1st Vice-President: Dr. FANNIE W. DUNN, Assistant Professor of Education, Teachers College.

2nd Vice-President: Miss LILLIAN HUDSON, Assistant Professor of Nursing Education, Teachers College.

Recording Secretary: Miss AGNES BURKE, Instructor, Kindergarten Education, Teachers College.

Corresponding Secretary: Miss EDITH E. SWAN, Executive Secretary, Student Organizations, Teachers College.

Treasurer: Dr. R. G. REYNOLDS, Director, Bureau of Educational Service, Teachers College.

Members-at-Large: Dr. BESSIE LEE GAMBRILL, Assistant Professor of Elementary Education, Yale University, New Haven, Conn.
Dr. EDWARD S. EVENDEN, Professor of Education, Teachers College.

Alumni Trustees: Dr. EDWIN C. BROOME, Superintendent of Schools, Philadelphia, Pa.
MISS ROXANA STEELE, Director of Training of Supervisors, Western State Normal School, Kalamazoo, Mich.

Alumni Office: Russell Hall, Teachers College, 525 West 120th Street, New York City.

Address all communications to ROLLO G. REYNOLDS, Field Secretary, Teachers College, New York City.

SECRETARY-TREASURERS OF TEACHERS COLLEGE CLUBS

ALABAMA
Mr. N. F. Greenhill
Cullman, Ala.

AMES, IOWA
Miss Julia L. Hurd
Ames, Iowa

ANN ARBOR, MICH.
Miss Edith Bader
1607 Granger Avenue
Ann Arbor, Mich.

ARKANSAS
Mr. W. E. McNelly
Fort Smith, Ark.

BANGOR, MAINE
Miss Nellie I. Gale
401 Center Street
Bangor, Me.

BATTLE CREEK, MICH.
Mrs. D. R. Dudley
Asst. Superintendent of Schools
Battle Creek, Mich.

BIRMINGHAM, ALA.
Mr. I. R. Obenchain
Glen Iris School
Birmingham, Ala.

BUFFALO, N. Y.
Miss Agnes McCarthy
Technical High School
Buffalo, N. Y.

CALIFORNIA
Professor Wm. E. Nicholl
Dean of Pomona College
Claremont, Cal.

CHADRON, NEB.
Miss Helen Cromwell
State Normal School
Chadron, Neb.

CHINA (Eastern)
Miss Nina M. Stallings
Soochow, Ku, China

CINCINNATI, OHIO
Mr. E. D. Roberts
Asst. Superintendent of Schools
Denton Bldg.
Cincinnati, Ohio

CLASS OF 1921
Miss Effie Dailey
318 Glenwood Avenue
East Orange, N. J.

CLEVELAND, OHIO
Miss Catherine D. Ross
1834 Grasmere Avenue
East Cleveland, Ohio

CONNECTICUT
Miss Marion C. Sheridan
711 Orange Street
New Haven, Conn.

DETROIT, MICH.
Mr. C. Louis Thiele
1354 Broadway
Detroit, Mich.

ERIE, PA.
Miss Elizabeth Pfeiffer
615 East 10th Street
Erie, Pa.

GEORGIA
Mr. A. J. Hargrove
Zebulon, Ga.

HARRISBURG, PA.
Miss Sarah Ellen Grimes
Steelton High School
Steelton, Pa.

INDIANA
Miss Flora Drake
2230 Brookside Avenue
Indianapolis, Ind.

KANSAS CITY, MO.
Miss Wilma J. Robinson
2012 Linwood Boulevard
Kansas City, Mo.

MACON, GA.
Miss Agnes Barden
Elementary Supervisor
Board of Education Bldg.
Macon, Ga.

MAINE
Miss Mary Louise Hastings
State Normal School
Gorham, Me.

MASSACHUSETTS
c/o Field Secretary, Alumni Association, Teachers College
(for the present).

MARYLAND
Miss Bessie C. Stern
Lexington Bldg.
Lexington and Liberty Streets
Baltimore, Md.

MINNESOTA
Miss Gertrude Drohan
2716 Portland Avenue
Minneapolis, Minn.

MISSOURI
Mr. F. W. Underwood
911 Locust Street
St. Louis, Mo.

MONTANA
Mr. Freeman Daughters
State University
Missoula, Mont.

NORTH CAROLINA
Mr. L. R. Johnson
111 Steele Street
High Point, N. C.

NORTHERN MICHIGAN
Mr. Sidney Herring
401 North Front Street
Marquette, Mich.

OKLAHOMA
Miss Nora A. Talbot
409 Knoblich Street
Stillwater, Okla.

PHILADELPHIA
Miss Erma L. Ferguson
Temple University
Philadelphia, Pa.

PHILIPPINE ISLANDS
Mr. Leodegoic Victorius
Bureau of Education
Manila, P. I.

PITTSBURGH
Dr. H. B. Smith
Director Vocational Education
University of Pittsburgh
Pittsburgh, Pa.

RELIGIOUS EDUCATION
Miss Faye Klyver
509 West 121st Street
New York City

SCRANTON, PA.
Miss Ruth L. E. Schener
324 Pittston Avenue
Scranton, Pa.

SOUTH BEND, IND.
Miss Mamie E. Kerner
115 North William Street
South Bend, Ind.

TOLEDO, OHIO
Miss Florence Boughner
Indiana School
Toledo, Ohio

VERMONT
Mr. Kenneth J. Sheldon
Montpelier, Vermont

VIRGINIA
Mr. C. B. Givens
4010 West Street
Richmond, Va.

WEST VIRGINIA
Miss Wilma C. Speare
Marshall College
Huntington, W. Va.

WISCONSIN
Mr. W. W. Brown
631 Monroe Street
Janesville, Wis.

HELP THE LOCAL CLUBS TO GROW

Join the Alumni Association through your Local Teachers College Club. If there is no Local Club in your vicinity, send your dues to the Treasurer of the Alumni Association, 525 West 120th Street, New York City. Membership in the Alumni Association and subscription to the TEACHERS COLLEGE RECORD, published in ten numbers, is $2.50 a year. The Club Treasurers keep 30 cents on each membership for the Local Club.

Help the Local Clubs to grow!

LOCAL CLUB CHARTERS

At last charters for Teachers College Local Clubs are ready. If the Secretaries of Local Clubs will send the Field Secretary the exact name by which the club is known and the date when it was organized, a charter will be forwarded.

SEND IN THE NEWS!

The Alumni Association has been given increased space in THE RECORD. Tell us what you and your Teachers College friends are doing so that we can tell the others.

Here is a beginning:

TEACHERS COLLEGE ALUMNI AT JAMAICA TRAINING SCHOOL FOR TEACHERS

A group of Teachers College graduates make up part of the faculty at the Jamaica Training School for Teachers, New York City. In their several fields they are bringing to a large number of student-teachers newer methods in education. With their mutual educational ideals they are working together enthusiastically, and their contributions are welcomed heartily by the Training School. Teachers College is represented by Miss Olive Shropshire, in the history department; Miss Jeanne Kirwan, in the English department; Miss Agnes Rowlands, in the mathematics and sociology departments; Miss Jean Towert, in the third grade of the Model School; Miss Marian Marshall, in the sixth grade of the Model School; and Miss Frances Greenburg, in the supervision of practice-teaching.

The Training School universally regrets the loss of Miss Emma B. Grant, who left the psychology department to accept a position as assistant in elementary education at Teachers College, Columbia University.

A LETTER SENT TO SECRETARIES OF TEACHERS COLLEGE CLUBS

September 29, 1924

To the Secretaries of Local Teachers College Clubs:

MY DEAR SECRETARY:

The Alumni Association is anxious this year to carry out a more ambitious program with the Local Clubs and I am bringing to your attention three matters which will be of interest to the members of your Club.

I. Please send to us as soon as possible the approximate dates of your Club meetings. We are anxious to have a member of the faculty meet with you. If your meeting is to be held in connection with a state, county, or local educational program, will you not ascertain if any member of the Teachers College faculty is to be on that educational program. If so let us know the name of the professor and we will arrange to have him meet with your Club.

In case no such faculty member is available, we will try to send a representative especially for your meeting. The travelling expenses of such a representative will be met by the Association. The Local Clubs are expected to attend to his hotel bill and local expenses.

II. I am sending you by parcel post some circulars relative to membership in the Alumni Association. Will you please distribute them to your members as enclosures in any letter you may be writing them or at one of your Club meetings. You may be able to use some of them to secure *new* members for the Association and your Club.

III. We are very anxious to print more news of alumni in the Alumni Section of the TEACHERS COLLEGE RECORD. You as secretary of your Club can render us a *real service* by acting as correspondent. Send us news of your club members and any other alumni. If all local secretaries will coöperate in this we can make the Alumni Section of THE RECORD a much more interesting department.

With best wishes for a successful year, I am

Sincerely yours
(Signed) R. G. REYNOLDS
Field Secretary
Teachers College
Alumni Association

ALUMNI TRUSTEE'S REPORT

At the last Alumni Conference Dr. A. B. Meredith, Alumni Trustee, made a report to the conference concerning a matter that is of particular interest to every candidate for the Doctor's degree.

He told the conference that the Trustees of Teachers College had authorized an appropriation of $16,000 to be used as a revolving loan fund to assist students in getting their dissertations published.

This action by the Trustees of Teachers College was taken as a result of a report previously made by Dr. Meredith in which he pointed out that the high cost of publishing was preventing a number of candidates from securing their degrees. Dr. Meredith ascertained by inquiry that very few candidates were aware of the fact that they might publish their dissertations in an abbreviated form, with the sanction of the Committee on Higher Degrees. He said that the typical candidate was bearing the total cost of printing his dissertation, and that the cost ranged from $380 to $950 for five hundred copies. In October, 1923, some forty-five candidates who had passed their final oral examinations had not been able to print their dissertations and hence had not received their degrees.

To remedy this condition it was suggested that

1. The printing of the conclusions only, or of some abbreviated form of a dissertation, become more general than at present.
2. A portion of the net surplus of the Bureau of Publications be used in establishing a revolving fund to assist candidates in getting their dissertations published.

The above report was referred to the Education Committee of the Trustees, and a tentative plan prepared in cooperation with the Bureau of Publications for financing the printing of doctors' dissertations was outlined to the Board at its meeting on February 14, 1924, with the result that a revolving fund not to exceed $16,000 was authorized to assist in making the plan effective.

The essential features of the plan will appear in the several paragraphs of the agreement which the candidate may make with the Bureau of Publications. Of course, the option of private printing or printing through a commercial house is still open to the candidate.

AGREEMENT

1. The Bureau accepts for publication the book entitled .....
   to be manufactured in accordance with the style and form adopted by the Bureau for the series of publications known as Teachers College Contributions to Education. The Bureau undertakes to provide all necessary editorial service, including proof-reading.
2. The Bureau will appropriate as a capital charge $400, or as much thereof as may be necessary to pay for the manufacture of 500 copies of said book.
3. The capital charge referred to in paragraph 2 shall be repaid to the Bureau out of the net proceeds of sales of the published book. Net proceeds as here used means the retail sale price less 20 per cent.
4. In case the cost of manufacturing 500 copies of said book shall exceed $400, the author agrees to pay to the Bureau at the time of publication, a sum equal to the amount of said excess cost.
5. In case more than 500 copies are manufactured the author shall pay to the Bureau the difference between the cost of 500 copies and the cost of the number manufactured.
6. After capital charges have been repaid to the Bureau, the Bureau and the author shall share equally all net proceeds as defined in paragraph 2.
7. The list selling price shall be $1.25 for paper bound copies and $1.50 for cloth bound copies. Students in residence, subscribers to the series, and book dealers shall receive a discount of 20 per cent from the list selling price.
8. The author agrees to purchase from the Bureau at the cost of manufacture 150 copies of the published book; of which 100 copies, bound in paper, shall be delivered to the Library of Columbia University; and 25 copies, bound in cloth, to the Bureau to be used for advertising purposes and for filing.
9. The author agrees to purchase from the Bureau at the cost of manufacture any unsold copies of the published book which the Bureau may have on hand two years after date of publication. At the option of the Bureau this requirement may be waived or extended.
10. The published book referred to in this agreement shall be copyrighted by the Bureau and ownership shall reside in the Bureau until this contract is terminated.

By the proposed terms it will be voted,—

1. That there is an automatic check on the length and character of a dissertation by the fixing of a basal cost of $400 for an edition of 500 copies, with a provision that any excess of cost will be borne by the candidate, whether the excess be due to the number of copies or to the length or character of the dissertation. The $16,000 made available is to be used in meeting these basal costs.

2. That the direct and immediate expense to the candidate is only for the 150 copies he is to buy. Of these, 100 go to the Library of the University as one of the conditions of his degree, and the others are to be divided equally between the Bureau and himself. Previously the candidate carried at the outset the cost of printing the entire edition.

3. Within two years, unless extended, all unsold copies of the dissertation will be taken by the author, so that the Bureau will not have on its hands a large amount of dead stock. If it is necessary to take this stock the author will then be in a better financial condition to do so.

4. The results of study and investigations will get to the educational public much sooner than has hitherto been the case, and moreover the publications will have a uniform selling price.

5. The candidate will be relieved of a very real difficulty in trying to find money to finance the final stage of his efforts toward the Doctor's degree, by reason of the further service which the College may give its students.

NEWS NOTE FROM ADVISERS OF WOMEN AND GIRLS

Mrs. Sue Stone Durand has been appointed dean of women of North Carolina College for Women at Greensboro, N. C. Miss Marie Andrews, who has also recently received her diploma as Adviser of Women and Girls, will assist her as social director of three residence halls.

Miss Edith Jane Stauffer, as dean of girls, has assumed responsibility for the development of a social program in Bronxville High School

With the beginning of the current college year Mrs. Louise B. More undertakes new work as dean of women in Hamlin College, St. Paul, Minn.

Miss Mabel Eigler has been appointed dean of women of the School of Commerce of Denver University.

Miss Lydia Jones, recently of State Teachers' College, San Jose, Calif., has accepted the position of dean of women at the Michigan State Normal College at Ypsilanti, Mich. Miss Jones was a member of the summer session faculty of the University of California during the past summer.

Miss Miriam Gerlach has resigned her position as dean of women in Washington State College at Pullman, Wash., to accept a similar position in the University of Oklahoma.

Miss Henrietta Silliman is the newly appointed vice-principal and dean of girls in the High School at Toulon, Ill.

Miss Caroline Dyson has recently been appointed assistant professor and assistant to the dean of women in the State Normal School at East Stroudsburg, Pa.

ELIZA F. OGLESBY

On July 16 Miss Eliza F. Oglesby passed away at her home in Detroit after a brief illness. Miss Oglesby had just finished a year of study at Teachers College, majoring in Elementary Education, and received both her Bachelor's degree and a Teachers College diploma in supervision. Miss Oglesby had made a brilliant record in all of her classes at Teachers College, and her death is a great shock both to her fellow students and to the members of the faculty under whose guidance she had studied. In commenting on her death the *Detroit Educational Bulletin* says: "No listing of achievements or abilities will adequately express the loss Detroit has sustained through Miss Oglesby's death. The glory of her life was its consistent expression of the Christian ideals of personal growth through service. Miss Oglesby was frequently characterized as 'pure gold.'"

DR. COOPER, DEAN OF KENTUCKY STATE TEACHERS COLLEGE

Dr. Homer Eber Cooper, formerly superintendent of the Training School of the Maryland Casualty Company, Baltimore, has been appointed dean of the Eastern Kentucky State Teachers College and Normal School at Richmond, Ky. Prior to his work in Baltimore, Dr. Cooper was head of the extramural education department and assistant professor of educational administration at the University of Pittsburgh. He received the Master's degree from Teachers College in 1917 and the degree of Doctor of Philosophy in June, 1924. Two years ago last January Dr. Cooper was married to Clara F. Chassell, Ph.D. 1920, psychologist of the Horace Mann School, Teachers College.

JOHN R. McLURE HEADS SCHOOL ADMINISTRATION AT UNIVERSITY OF ALABAMA

Dr. John R. McLure, who has recently completed the requirements for the Ph.D. degree at Teachers College, has been appointed professor of school administration and head of the department of school administration of the University of Alabama. Prior to his graduate study at Teachers College, Dr. McLure was superintendent of schools of Troy, Ala., for a number of years.

PRESIDENT McMULLEN ON LEAVE FROM FLAGSTAFF NORMAL SCHOOL

Mr. L. B. McMullen is on leave of absence from the presidency of the Normal School at Flagstaff, Ariz., and is pursuing graduate study at Teachers College for the degree of Doctor of Philosophy. He has been appointed an associate in normal school education. Mr. McMullen has been at Flagstaff four years. Prior to that he was director of the Training School of the State Normal School at Greeley, Colo. He received his Master's degree from Teachers College in June, 1919.

ROBERT K. SPEER, ASSISTANT TO DIRECTOR, BUREAU OF EDUCATIONAL SERVICE

Mr. Robert K. Speer was appointed assistant to the director of the Bureau of Educational Service, and assumed his duties on September 2d. He is assisting with general administrative placement. Before coming to Teachers College Mr. Speer was assistant director of research and reference in the Cleveland public schools, and later, principal of the Junior High School at Montclair, N. J. He received his Master's degree from Teachers College in June, 1922.

LEON L. WINSLOW, DIRECTOR OF ART IN BALTIMORE SCHOOLS

Mr. Leon Loyal Winslow, who received his Bachelor's degree from Teachers College in 1912, has resigned as supervisor of fine and industrial arts in the New York State Department of Education to accept a joint position as director of art in the public schools of Baltimore, Md., and teacher of art education in Maryland Institute at Baltimore. Mr. Winslow assumed his new duties on September 15. His headquarters are in the School Administration Building, Madison and Lafayette Avenues, Baltimore.

A NEW BOOK ON EDUCATION

A notable contribution to the literature on education has been made by Dr. Henry Suzzallo, president of the University of Washington, in his book *Our Faith in Education* (Lippincott). President Suzzallo is an alumnus of Teachers College and a former member of the Faculty. He received the degree of Doctor of Philosophy in 1905, and later was professor of elementary education, when he resigned in 1915 to become president of the University of Washington.

CHANGES IN NAME

Miss Grace Cutting (M.A. 1923; History) is now Mrs. H. J. Deuel, Jr. Her address is 52 West 96 Street, New York City.

Miss Harriet Esther Burdick (B.S. 1919; Fine Arts) is now Mrs. W. E. Deatrick, 1029 S. Buckeye Street, Kokomo, Ind.

Miss Margaret Jane Robertson (B.S. 1918; Fine Arts) is now Mrs. J. R. Cole. Her present address is 4116 S. 29 Street, Flushing, N. Y.

Miss Ina M. Wheeling (M.A. 1923; Social and Religious Work) is now Mrs. R. M. Thompson. Her address is 288 Chauncey Street, Long Island City, N. Y.

Miss Ruth L. Leyse (B. S. 1923; Household Arts) is now Mrs. W. D. Gahman, and her present address is Magley, Ind.

Miss Lulu L. Rehorn (M.A. 1924) is now Mrs. Enoch Beichley. Her present address is 416 W. Alder Street, Walla Walla, Wash.

Mr. Lindsay Jackson March (M.A. 1923) was recently married to Miss Faith Alice Buckingham of Webster, Mass.

Miss Irma B. Overlander, recently a student in music at Teachers College, is now Mrs. James Curtis Havens. Her address is 439 East 176 Street, New York City.